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Original Contributions.

FIVE-ROOTED THIRD MOLAR.

BY A. V. TUCKER, D.D.S., NEW YORK CITY.

Some time ago a woman came into my office with a great deal of pain in her jaw and a great lack of money in her pocket. Happening to be in a charitable mood, I extracted the cause of her trouble gratis, and was more than repaid by the possession of a decided curiosity—a left superior third molar with five distinct and well-



developed roots. There was absolutely no possibility of my mistaking the tooth, as the first and second molars—large, strong and perfectly sound teeth—were in position. I experienced considerable difficulty in removing it without breaking any of the roots, as you can readily understand by looking at the tooth. The cuts show views from either side. The crown was entirely gone, and I cemented an old cap on in place of it, so as to have something for the forceps to grasp. I never before saw or heard of a third molar with five distinct roots, so report this case, thinking it may be of interest to the readers of the DIGEST.

REVIEW OF DR. SMITH'S PAPER ON "AN ORIGINAL SYSTEM OF TIGHTENING LOOSE LOWER INCISORS, ETC."

BY OTTO E. INGLIS, D. D. S., PHILADELPHIA.

In the July and August numbers of the *DIGEST* there appeared a paper by D. D. Smith, D. D. S., in which he took occasion to comment in a manner entirely unwarranted by the facts, and objectionable as well as unprofessional, upon a paper written by myself for the *Stomatologist*. My first impulse upon reading the article was to ignore it, but in consideration of the fact that Dr. Smith at the present time is being much lauded, and that much of what he says is taken for granted, I could but feel that without a protest upon my part his article might be accepted as truth and my silence be misconstrued.

Were Dr. Smith a member of the medical fraternity one could readily understand his "wonder if the general level of teaching in our modern schools is on a plane with the article referred to," but when after various onslaughts he says (p. 546), "The teachings of the profession have been and still are that the application for devitalization must be made directly to the pulp tissue," we can only wonder why he does not say outright, can it be possible that the profession is so lamentably ignorant?

He quotes me correctly on page 540 except for a semicolon and a comma: "These are briefly devitalization by arsenic; benumbing by cocain, cataphoresis or pressure anesthesia, etc." Passing over his cultured use of the semicolon, I wish simply to say that I used the words "cocain cataphoresis" in conjunction.

Dr. Smith ignores (except in a misleading way) the following sentence immediately following the matter quoted: "It is not intended to review the application of these methods, but to compare their advantages and disadvantages in view of work to be accomplished, the time required, and the after-results." Upon this line my paper was written, and I thus explain in order that the slur upon it and myself may be understood as such and in no sense as an apology. I am familiar with all the known methods of pulp removal, and there are several besides those I discussed as being accepted methods. I happened to make mention of the shocking-out method as quoted, and then I added what Dr. Smith omitted

to quote, "Its use has been satisfactory to some, but the slight element of uncertainty in its application, and the production of alarm on the part of the patient, indicate pressure anesthesia as a more reliable method. It has no application to posterior teeth."

Dr. Smith evidently saw an opportunity in this statement and departed from the theme of his article long enough to rap me on the head. He would like to know how the method of shocking-out a pulp with a wooden splint "*removes*" the pulp (p. 541). If he will read Evans' "Crown and Bridgework," 5th edition, 1896, he will find on page 17 the following in regard to the method: "When the wood is withdrawn the pulp usually adheres to it," and again, "In this operation only trifling pain is experienced by the patient, as the pulp is paralyzed by the shock of excision of the crown or by being forced upward toward the foramen and against the walls of the canal." The withdrawal with the stick has been my experience in all the cases I have attempted where a free exposure existed or could be made. I had one failure due to an appearance of wide exposure in a case of oblique fracture of a central incisor. In reality a polypus of the pulp had formed in two days, which I mistook for a simple case of protruding pulp. I shocked with unpleasant consequences, hence my advice to obtain a free exposure.

Dr. Smith asks for experiences of favorable nature, so I offer the following: Year, about 1895. Case, full exposure of a central incisor pulp by caries. Place, Clinic of the P. D. C. Operation, Prof. T. C. Stellwagen drove into the pulp by hand force alone a sharpened Japanese toothpick previously soaked in carbolic acid to make it flexible and sterile. Result, so little pain that for fifteen minutes students examined the case with the toothpick in the root canal, and to each the patient expressed his satisfaction with the operation. The pulp came away *with the stick* upon its removal. The canal was filled as usual and no ill results followed. Another case: Year, 1893. Clinic of Prof. James Garretson. Case, man with upper lateral broken off at the gum line. The pulp was exposed and excruciatingly painful. Prof. G. requested me to give the man relief. I tried analgesics without result. I had no cocaine at hand and pressure anesthesia was not then known. There was no cavity in which to retain analgesics or arsenic upon "vital responsively sensitive dentin," so I "refinedly" drove a wooden stick into that sensitive pulp. Now was that not shocking? The pulp died on the instant. I removed it *on the stick* and treated as usual without

ill results. The patient expressed his relief in the most positive terms.

I did not relate these cases in my article in the *Stomatologist* because I supposed *everybody* had read Evans' "Crown and Bridge-work," page 17, in regard to these matters, viz.: The methods of devitalizing previously described are applicable principally to the pulps of incisors and cuspids," and again, page 18, "Practical experience shows that usually instant devitalization or extirpation is the most satisfactory in general and final results."

Dr. Smith would like to know "as to which end, the apical or crown, the wooden splint should be driven in at." I can reply only by saying that I drive wooden sticks into the apical ends of only such individuals as require a renewal of cerebral cortex.

All of these matters I lecture upon, but I presumed in my reader sufficient intelligence to understand the object of my paper without constant reiteration of trite subjects.

Dr. Smith does not like my use of deliquesced zinc chlorid as a styptic, and says it has no styptic action. I use deliquesced zinc chlorid on a cotton twist not only for active apical arterial hemorrhage, but for the serous discharges of an inflamed surface (chronic apical abscess without fistula). In both cases it acts like a charm in promptly checking the discharges of blood or serum, and no ill results accrue as a rule. Occasionally a little tenderness supervenes, but it follows as frequently if not more so in cases of this kind when the drug is not used. The mere sudden removal of the pulp must derange temporarily the apical circulation and aseptic apical pericementitis appears. This is rarely severe and may occur when there is no hemorrhage. The zinc chlorid is probably not in the deliquesced form when it reaches the apical tissues, but an astringent dilution of deliquesced zinc chlorid by the blood fluid. According to the medical dictionaries, a drug which checks hemorrhage by local action is a styptic.

Dr. Smith has turned his imagination loose to conjure up results which have no foundation in fact. I will relate the history of a case which may be of interest in this connection. I was once called upon for an immediate filling of a root and cavity. The patient had to leave the city for six months. I demurred, but the patient insisted in spite of a bad prognosis.

The case was one of a wide open root, with the apical tissue readily accessible, and slight suppuration present. It was prac-

tically a case of apical ulcer. I washed out the pus with hydrogen dioxid, touched the apical tissues with deliquesced zinc chlorid, dried the canal, and filled it with gutta-percha in combination with thick chloro-percha. I filled the cavity, dismissed the patient and set my imagination to work. After six months of sleepless nights I again saw the patient, who reported absolute comfort from date of filling. There is some more partial culture for the "uninitiated."

But Dr. Smith's "main purpose" in the paper, aside from pointing out my shortcomings, is to start arsenic "on a new and enlarged mission for the relief of suffering," which in brief is, "that the arsenic should never be applied directly to the pulp tissue, but always to vital responsively sensitive dentin," the application not to remain over forty-eight to seventy-two hours. Forty-eight hours is to be considered a general limit. He says that it is a "*strictly painless method*" (italics mine). Now a strictly painless method should *never* produce pain, and if that is true, what about the following case? Patient, a lady. Tooth, a right lower molar containing a cavity which when cleansed presented clear, apparently dense, highly vital and responsively sensitive dentin over the pulp. There was no exposure of the pulp, but evidence of hyperemia. Analgesics were applied for twenty-four hours in anticipation of trouble, and then arsenic of about the formula advocated by Dr. Smith was applied to the vital dentin only. Within twenty-four hours a violent reaction took place. The application was removed, the pulp again quieted, and another application made later more to one side of the cavity. Another violent reaction occurred. The final treatment consisted of administering nitrous oxid to the patient and cutting out the bulb of the pulp with a bur. After the recovery of patient and cessation of the hemorrhage, arsenic was applied to the stumps of the pulp and acted like a charm. How would Dr. Smith *always* apply arsenic to vital dentin in cases of semigangrene of the pulp, or ulceration of a canal filament?

Dr. Smith says that "the one retaining material which has proven wholly satisfactory is a white 'temporary stopping.' (Gilbert's red stopping is intensely irritating and should never be used in a tooth.)" We have here a little scapegoat with which Dr. Smith sacrifices his failures. I fail to see how, when an application of arsenic is made to dentin only, Gilbert's red stopping can be more irritating than his white (he makes both varieties). As a matter of fact, no one who knows how to apply arsenic will squeeze any

temporary filling directly upon the application and the pulp. Such action will almost certainly carry the arsenic to the gum tissue, and furthermore, it causes pressure upon the pulp, which will account for the pain. Granting, however, that Dr. Smith obviates the above difficulties by placing cotton or caps as intermediates, which prevent the contact of the temporary stopping with the dentin except at the walls of the cavity, I fail to see how temporary stopping irritates the pulp more quickly than the arsenic, unless the dentinal filaments when irritated react more rapidly upon the pulp than the arsenic can devitalize fibrillæ. The temporary stopping would have to get up a general bulbous hyperemia to accomplish this, for unless carelessly applied the stopping is at a distance from the arsenic and cannot affect the dentin beneath the arsenic except through the medium of the pulp body.

I wish, however, to assert that Gilbert's pink temporary stopping is not irritating to any dentin which will not react to anything placed against it. Gold sometimes causes a severe reaction of the dentinal fibrillæ and pulp when placed in a small cavity. Jack has called attention to this, and states that occasionally the filling must be removed and the cavity carbolized and refilled. I have treated several such by coating the filling with varnish, renewing as necessary for about a week. In all cases so treated the reaction to cold disappeared. After cataphoresis a reaction may occasionally occur, no matter with what the tooth is filled, except when analgesics are employed. Even white gutta-percha will sometimes act as a slight irritant, or call out the reparative efforts of the pulp and fibrillæ, which are beneficial rather than otherwise.

As a proof of the non-irritating character of pink temporary stopping, I offer the following case from my practice. I filled, one afternoon just before one of my lectures, a deep buccal cavity in a left lower third molar with white high-heat gutta-percha. The cavity was thoroughly cleansed of all decay. While finishing up I noticed that fluid appeared at the joint between the filling and the margin, i. e., capillary leakage had occurred in spite of my care. Being in haste to meet my appointment with the class, I left the filling in place, acknowledged the defect to the patient, and made a new appointment. The patient was unable to meet this engagement, and about two weeks passed before I again saw her. She then complained of reaction to cold in both the second and third molars, which after isolation and testing I diagnosed as due to mild

hyperemia of each pulp. That in the third molar I attributed to the irritation of the fibrillæ and pulp by fermenting fluid held in contact with the dentin. That in the second molar I held to be a reflex irritation. I removed the white gutta-percha, sterilized the cavity, carefully dried and rapidly filled it with Gilbert's pink "temporary stopping." The reaction in each tooth gradually ceased in the course of a few days, and I then removed part of the temporary stopping and filled again with gutta-percha. There was no further irritation.

Dr. Flagg taught long ago the use of arsenic applied to vital dentin, but did not prefer it as a system, only as useful when trouble was anticipated. He usually used an analgesic on cotton in connection with the distant application.

I advocated in my paper the removal of an inflamed bulb or its depletion under cocain pressure anesthesia, in order to avoid the preliminary or conjoined use of analgesics. After this depletion devitalization is quite certain as a rule.

The use of arsenic upon a healthy portion of dentin I pointed out in an article in the *Stomatologist* for February, 1897, and stated the rationale of the process. I also emphasized the value of analgesics applied at the same time to the pulp.

Dr. Smith claims that a short application is best, but I do not see how the length of application can affect the result. Indeed, it seems to me that Dr. Smith had better have utilized in review the scientific literature which "would add little to our information" (p. 542). He would have shown by reference to Arkovy (conveniently found in Burchard's "Dental Pathology, Therapeutics and Pharmacology") that arsenic is taken up into the blood ways, and by reference to Flagg, that of a twenty-fifth of a grain applied to a pulp, only about a millionth enters the pulp beyond the immediate vicinity of the point of application, and that none enters the apical tissues, or at least not enough to kill an appreciable amount of tissue, as occurs in the pulp and in the gum. It is impossible that dead pulp tissue should transmit arsenic, and that it does not is proven by the fact that the leaving of arsenic for a long time (several months or a year) is not productive of apical tissue death, nor even of irritation not explainable on the ground of putrefaction.

It follows that such arsenic as enters a pulp must get in before the portion of pulp beneath the application dies. This occurs rapidly, but the action in the root filaments continues for some time. When an application is made to vital and sensitive dentin the

part of the pulp beneath the tubule mouths takes it up and dies first. Dr. Smith says that sometimes a pulp may be *removed* after twenty-four hours, so upon his own clinical evidence the pulp must have been acted upon in such a manner as to get the arsenic clearly beyond all control in a time well within his limits. Any painful reaction is certainly due to the rapid vascular excitement in some part of the pulp. I think I can prove this by a case. A lady had an upper cuspid being overworked by malocclusion, which was in part the cause and the result of a pericemental degeneration and pyorrhea. A plate approximated the tooth, and I desired to retain the root for the sake of the facial expression. I applied arsenic to vital dentin only, and for eight days there was no reaction. On the ninth day pain of a severe gnawing character began and so irritated the lady that she demanded relief. I simply perforated the dentin and entered the pulp with a spear drill. Examination showed the pulp to be about two-thirds dead, the apical portion being sensitive. I applied an analgesic, but left the dead portion of pulp for several days, when I attempted to extirpate but found the apical third still vital.

The following deductions seem rational: 1. It is possible that had I made a short application there would have been no reaction, but that there are no possible means by which this can be determined for this tooth. 2. That what arsenic got into the pulp was insufficient to kill it, although a full dose was applied. 3. That the reaction occurred at a point high up the canal and consisted of a vital reaction against some irritant. 4. That as a part of the pulp was dead and so unable to transmit arsenic, that irritant was the arsenic already in the pulp next to the living filament or the dead tissue itself. 5. As the arsenic did not subsequently particularly affect the living portion after the congestion was relieved by puncture with a drill at a point distant from the reacting tissue, it is reasonable to suppose that the pulp died progressively by reason of a hyperemia which interfered with its nutrition, and that when a drain was established by puncture the living tissue could not become congested. Had there been arsenic in appreciable amount in the dead portion of the pulp, it would have killed the living part, as gum tissue is killed, even after a drain was established.

It has not been my experience that applications to dentin or pulp are either universally painless or painful, or that applications to any part are of any use in severe bulbous hyperemia until depletion

is practised. In localized inflammation of a pulp horn a distant application combined with analgesics at the horn is advisable, as I have previously pointed out, but that it is possible to deplete freely and then make a painless application *to the pulp* I have shown.

Dr. Smith seems to have seized upon an idea practically already proven to be good, and made the welkin ring with his "I always do it." As cases cited and questions asked show, it cannot *always* be done.

Dr. Smith takes me up on the "patients of a type to resist arsenic," and immediately says that "investigation will show such cases to be in connection with vigorous active pulps in strong dense teeth." I agree with Dr. Smith in his observation, and the types of patients who possess such teeth are the ones referred to.

Dr. Smith has found so large a mote in my eye that he has overlooked the beam in his own; indeed, it seems to have rendered him extremely myopic. Let us examine a few of his statements in the light of the present state of dental science. On page 536 he says: "The crude mechanical attempts which have been made with strings and wire in an effort to stay this loosening have contributed greatly to the general infection of the mouth and served to hasten the inevitable issue." And again, "We fail to note a suggestion even looking to a cure." Strings and wire! Can it be that this is the "baby" he has engaged to "knock down?" Has he overlooked the several neat if showy devices for the banding, splinting, etc., of the teeth? It would seem that he does not possess or has not read Evans' "Crown and Bridgework," or paid attention to devices which have been presented from time to time of much greater merit than strings and wire.

Evans in his fifth edition, Fig. 358, illustrates a device for banding lower incisors and, if need be, soldering in an artificial incisor or two. He also shows in Figs. 334-5-6 Litch's pin-bridge for vital teeth, differing from Smith's device only in the matter of pins and the object for which it is constructed. Burchard in his work on pathology illustrates two methods of splinting loose lower incisors.

Dr. W. H. Trueman in or about 1894 introduced a device consisting, in brief, of a bar adapted to the lingual surfaces of the tips of the lower incisors. To this were fastened portions of screw-threaded wire to enter holes drilled in the incisors from the labial

to the lingual side at a safe distance from the pulp and cutting edge. The exact method in detail may be found in *Cosmos*, and Dr. Trueman has now had eight years' satisfactory use of it.

Dr. L. C. Bryan of Basle, Switzerland, introduced in 1898 a continuous pure-gold band, perhaps three-sixteenths of an inch wide, to encircle say three or four lower incisors. This was adapted to the necks and pressed into all interspaces to meet the opposing part of the band. When adapted the band was sprung off and finished up, rubber dam applied, and cement placed in the band and about the necks of the teeth. The band was then re-adapted to the teeth and secured by means of pure gold clamps. Dr. Bryan said that an appliance placed four years before had cured a case of pyorrhea, and that the tissues were healthy up to date of writing. I have used this device since 1899 and like it.

I do not intend to discuss further the merits of these forms of retaining apparatus, nor of small bars with clasps attached, nor of wires fitted into incisal edges when these are broad, but my present point is to show that Dr. Smith's device, while possessing good points and indefatigably pushed, is but a step removed from other devices and by no means such an advance upon the present resources of the dead level of dentistry as his "strings and wire" comparison would indicate. Whether it is an advance at all only time can tell. We are forced to conclude that Dr. Smith either does not know of these devices or chooses to refuse to credit them as offering any suggestion in his work. At any rate, he has ignored them in his presentation.

Dr. Smith devotes much space to proving that a pulpless tooth is not a dead tooth, but refrains from quoting Flagg, in the little quiz book referred to, who asserted the same fact, with which everybody is familiar. He says in four breaths, p. 538, "There is not only no injury to the root in a wisely directed devitalization, but there is considerable gain," and "physiologically the cementum receives its life and nutrition from a source wholly independent of the pulp, and it is unaffected by devitalization of pulp tissue." And p. 539, "for the root portion of the tooth, in connection with its pericementum, is an independent vital organ retaining and exercising function the same as when *the pulp distributed nutrition and sensation to the dentin and enamel of the crown*" (italics mine), and "a noticeably frequent result of pulp destruction is a closer, firmer union of root and alveolus. This is probably due to two

causes: First, an increased tendency to a deposit of cemental tissue on the surface of the root, and second, the entire obliteration of calcific deposits in cementum through pulp influence."

I fail to see how a cementum with its pericementum can be independent of pulp action and unaffected by the devitalization of pulp tissue on the one hand, and yet there be a considerable gain by killing the pulp wisely. Granting the possibility of hypercementosis as a result of devitalization, I fail to see how the gain is made by the entire obliteration of calcific deposits in cementum through the influence of a pulp that has been wisely killed. Does Dr. Smith mean by calcific deposits in cementum a lessening in calibre of the lacunæ and canaliculi at the expense of their contents? If so, how can devitalization, which is expected to bring about the deposit of new cemental tissue, accomplish their elimination? If he means that deposits of calculi *in the pericementum* and *on* the cementum are directly due to pulp influence, I fail to see how a dead pulp can obliterate them, and he offers no proof that anything ever obliterates them or that they are present in the cases of which his article treats.

Our knowledge of such deposits is altogether due to such cases as come to our attention in the so-called gouty pericementitis, and when these are found to be in relation with a deposit the case is not ordinarily cured until the calculus is mechanically removed. In the case of loosening of lower incisors the calculus is deposited from the saliva and the pulp has little to do with the matter, except perhaps to be reflexly or mechanically irritated.

The crowning statement of Dr. Smith's paper is the one made on p. 537. In it the lower stratum of dentists is informed of wonderful things in dental embryology. Dr. Smith says: "Turning first to the living pulp, its work, as builder and nourisher of dentin (whether of root or crown) and of all enamel, is beyond dispute or question. The pulp is the only source of nutrition or sensation distributed to dentin or enamel in any part of the tooth; it also binds the dentin and enamel into sentient and nutritive agreement, through that vital force we call life." This is stated repeatedly, so there is no mistake of "terms, means or methods."

In the American System of Dentistry (1884), a chapter in which Dr. Smith wrote; Dr. Sudduth taught that the enamel is formed by the ameloblasts, specialized columnar cells upon the under

surface of the enamel organ, and that the latter is of epithelial origin.

Dr. Williams about six years ago demonstrated by photomicrographs that this process was correctly described by Sudduth, and he showed the peculiar structure of enamel, its globules and interprismatic cement substance. He also offered proofs that the two substances are deposited more or less simultaneously by the ameloblasts upon dentin *first* and afterward upon previously formed enamel, and so on until the outer form of the crown is complete. The ameloblasts were shown to constantly recede from the dentin and pulp as this enamel is deposited. As the pulp builds dentin it recedes from the neighborhood of the enamel, until finally it occupies a typical pulp cavity. Dr. Smith should read Andrews in the "American Text-book of Operative Dentistry" on this subject.

The nutrition of enamel by the pulp is a very questionable point. Williams showed that no stain used by histologists has any effect on enamel, and he concluded that it was without nutrient spaces. Sudduth regarded it as merely a "coat of mail," and Tomes has shown that it has little organic matter but is a fully crystallized mass.

Dr. Smith bases the apparent change of appearance in teeth treated by his prophylactic system upon this imaginary nutrition. White spots are said to disappear, etc., because of it. As a matter of fact, the appearance may be largely attributed to either a change in the dentin shown through translucent enamel or to the lapidary effects of daily and monthly polishing. The polished top of a marble slab appears to differ in color and texture from the bottom, but drop a little sulfuric acid upon each and their natures are seen to be identical.

My daughter, aged fourteen, has a small white spot or developmental defect upon the labial surface of a central near the incisal edge. This is a spot that has been subjected to constant friction for *eight years*. It has not changed in appearance in the slightest degree. The incisal edges of her teeth were almost transparent, but are now partly worn. It is quite possible that white spots made by acid action may be mechanically removed by the daily powder and monthly pumice friction, but that is not due to enamel nutrition.

Dr. Smith claims that the pulp furnishes sensation to the enamel. The idea is certainly a new one and springs Minerva-like from the

forehead of Jupiter. Dental histologists will be extremely obliged to Dr. Smith for his valuable and unquestionable contributions.

"These quotations from this recent article are but samples of the incongruous absurdities put forth as the teachings of dentistry," and come from the pen of one who has been said to be "considered by many to be one of the best dentists not only in Philadelphia, but in the country."

In conclusion, I wish to say that I would much rather not have been compelled to write this review, and I wish also to state that I believe that there are good points in Dr. Smith's work for which he is entitled to credit, but I like neither his science nor his mode of attack. Feeling that I have been forced to reply, I have gone at it a la Polonius.

PRESIDENT'S ANNUAL ADDRESS.

BY M. L. HANAFORD, D.D.S., ROCKFORD, ILL. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

It is said that "well begun is half done." In making my beginning I shall profit by the example of the good colored preacher who, on being asked the secret of his ability to give such powerful sermons, replied, "Well, you see, when I get up to preach I say, 'Brethren, remember three things;' and then I set to work to think *what* three things there are to remember." I feel sure there must be "three things" for us to remember—let us see if we can find them. First, let us remember that the past year has been one of prosperity in the business world, and that dentistry has partaken of that prosperity, for scientific dentistry may await in vain its opportunity if the people who need its service have not the wherewithal to give it employment. We sometimes deceive ourselves into thinking that our services are in the class with so-called necessities. They may be to a limited extent, but from the treatment of toothache or the making of plain fillings and rubber dentures, it is a far cry to extensive gold or porcelain restorations, crowns, bridges and continuous gum. These latter may for many of us lie on the shelf covered with metaphorical dust and cobwebs, until the time of general prosperity, when the people have leisure and means to get a little away from the bare bread and butter idea. We in the last few years have felt the stimu-

lus of "easy times," and the result has been a getting out of the ruts, and the acceptance and practice of advanced ideas and methods by the average dentist. And remember, it is the work of the *average* dentist which makes for the professional and business welfare of all—high or low.

Let us remember that during the past year the methods of our state board have been reviewed and corrected; that the personnel of the board has been changed so that we need no longer blush at the bare mention of that body or its official acts. But let us also remember that our dental law is one of the poorest—that not only are we behind other states in this, but we are behind the medical profession in our own state. Why should all applicants for license to practice medicine be required to pass examination, irrespective of the fact of graduation from medical colleges, any more than candidates for the practice of dentistry? Are medical colleges more remiss in their duties than dental colleges? Doubtless all graduates from dental colleges *ought* to be well qualified to practice dentistry, but we know they are not. Those who are qualified certainly would not fear such an examination, and the state board would be relieved from the troublesome question as to the "reputability" of colleges. No worthy man could possibly suffer, and, in my judgment, the general good could not fail to be greatly advanced by such a requirement.

Let us remember that we are a great and strong society. Perhaps there is little danger of our forgetting this, having been told it annually for at least twenty-five years. Let us rather remember that since we are a great and strong society, much is required of us. Our meetings have ever been inspiring and helpful to every member of our profession, and indirectly to every citizen in this great commonwealth. Let the younger members in different and perhaps distant parts of the state, who may be somewhat doubtful as to whether it will "pay" to attend meetings year after year, remember the many men as great and learned as themselves, who have said truthfully and feelingly, "All that I am I owe to this society." In the year 1883, when this society endeavored to show its love for our honored nestor, Dr. Black, by presenting him with a small token of its esteem, he said among other things—"Gentlemen, I personally owe this society much more than it owes me. Whatever I may be to-day in our profession, whatever I may be as a student, whatever my capabilities may be for good; I owe it more to this society than to any other one instrumentality. You have done more for me than I have

done for you." In view of such an acknowledgment it ill becomes any of us to make light of the advantages which we enjoy to-day.

But while appreciating fully all these facts, we are not to plume ourselves too much on our past record. Times and circumstances change. District and local societies have sprung up all over the state, and they are now doing much of the work which formerly had to be done by the state society. Our work should correspond with the dignity commensurate with our age, which means that it should be scientific, well considered, mature. I hear someone object that this would lead to the presentation of too many papers treating of theoretical or so-called scientific subjects; but let that one remember that nothing is truly practical which is not based upon correct theory. What could be more practical than the work of Dr. Black in the study of caries fungus, and of Dr. Andrews in showing on the screen the actual penetration of the enamel and dentin by this fungus, followed in due time by the discovery and demonstration of the microbic plaque of Williams? Conceived as a theory, the origin of caries of the teeth in an acid-producing fungus becomes an established, demonstrable fact, and every intelligent dentist who fills teeth to-day owes a debt which he can never pay to the men who gave him first a theory and then a scientific demonstration. As has been said, the smaller and local societies can do much of the elementary work which needs to be done; and because they are doing that work well, it would seem to be good sense that our programs should include even more material of a scientific nature than formerly, and less of an elementary character. It would also seem that there might be a measure of unity as to the subjects presented—a key-note which should dominate as a leading idea the work of the society during the meeting.

This is offered in no spirit of criticism of former programs, which have doubtless reflected the desires and needs of the membership, but with the idea of calling attention to the fact that although great, we are not as great as we should be.

Discussion. *Dr. C. P. Pruyn*, Chicago: Perhaps we don't fully appreciate the blessings that this society confers upon us, but we are told by men who visit other large societies that this is the best in the country. One evening in 1876, after attending the Chicago Dental Society, Dr. A. B. Clark and I were walked about the streets by Dr. Joshua Smith and bulldozed into joining this society. I have always felt under great obligation to Dr. Smith, and if some of us

would do a little bulldozing among those who are not members of the society we would be conferring a great favor on them. I cannot help thinking of Drs. Cushing, Swain and Dean, as well as many other men who helped to make this society what it is, and who always made me welcome. When you see a young man here, don't hesitate to make him feel at home, for the treatment he receives at the first meeting or two may decide his future.

Prof. Allen, in Rush Medical College, used to say: "In diagnosis always remember these three: first, the condition of the part; second, the condition of the blood, and third, the condition of the nervous system. If we as dentists should remember these three things we would practice our profession in a more intelligent manner. When I joined this society one of the dominant thoughts was pulp-capping, and as we were doing it without "these three," we had no end of failures. Nowadays when we cap pulps we do it with a knowledge of the environments.

Everyone is ashamed of our state dental law, and if we ever have a better one it must come through the efforts of this society. We now have a good state board and we ought to give them a good law to work under.

Dr. J. N. Crouse, Chicago: What's the matter with the law? The attorney general tells me we have a very good one, but the trouble is that it hasn't been enforced. The board has absolute power to carry out the law, and I have no doubt will do so. We would better leave the law just as it is, for by changing we are likely to get a worse one.

Dr. J. G. Reid, Chicago: We have probably as good a law as there is in the United States, but the fact is that we have never known until now just how far we could go and what we could do. Recently, however, the attorney general of the state has given some opinions and construed the law, so that we know where we stand. I will distribute to all present a copy of the new rules and regulations, which I hope will be read. The Board has spent considerable time in collecting this matter, which fact I mention in passing simply to let you know that the board is not idle, but is composed of men who have an interest in the profession and the public.

There is one point in the law that could be materially improved, namely, make the state society sponsor for all who shall be appointed as members of the board. This being a representative organization of the profession in the state is better qualified to select the proper material for the Board than outsiders who know nothing of the men.

Dr. G. V. Black, Chicago: If the attorney general's interpretation stands our law is a good one and we need not trouble ourselves at present about any modification of it, but as many men will be denied examination under these new rulings, it is very probable that the law will be tested in the courts. The rulings of the courts in various states during the year past have been such as to place the interpretation of laws and the making of rules in the hands of the boards. The courts recognize the advancement that is taking place in this and other professions, and seem to consider it not only the right but the duty of the boards to advance their rulings to meet the advancement in education among the profession and the people. For instance, if the law states that a student must take a course of two years in college before beginning practice, and the dental education is advanced to three years, it is held to be the duty of the board to enforce the three years, regardless of the law. In this way the board becomes the interpreter of the necessities of the profession and of the people. It must feel the pulse of advancement in education and keep up with it.

Dr. Don M. Gallie, Chicago: I think Dr. Crouse has sounded the right key—the law is all right, but it has not been enforced. The less we tamper with it the better results we shall get, especially if the dentists support it. One thing the dentists of this state must remember is, that according to the recent ruling of the attorney general the state board is not permitted to have its own attorneys, as a state's attorney must prosecute these illegal practitioners. The Board can't do it, for besides the ruling, it hasn't the money. Any dentist who has to compete with an illegal practitioner should prosecute him.

Dr. C. R. Taylor, Streator, Ill.: I wish to recur to the point made about the attendance at our state society. If we would accomplish what we owe to ourselves and the people in the communities in which we live, we must get that missionary spirit in our hearts and teach our confreres that it pays to attend the meetings of the state society. I am proud to say that every dentist in the town of Streator, excepting one who is unethical in practice, will be here.

Dr. Hanaford, closing discussion: It does seem as if these two defects in the board might be remedied, first, the fact that the appointment of members is in the hands of politicians, and, second, that there is no provision for sufficient funds.

ART AND INVENTION, REPORT OF THE COMMITTEE.

BY HART J. GOSLEE, D.D.S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

While the progress of dental art and invention is coextensive with the advancement of dentistry, this particular field has been perhaps less active than usual during the past year, yet many new and more or less ingenious and useful appliances have been devised. The records show that something less than one hundred patents have been issued, covering various kinds of dental appurtenances, with a range of application and usefulness extending from a chair and parts to be affixed thereto to broaches, floss-silk holders, and tooth-brushes, and including remedies for the cure of pyorrhea alveolaris and agents for mummifying pulps.

The patentees of those which were deemed to be of sufficient general interest and importance were communicated with, and the presentation of new instruments, materials and ideas was solicited through the various journals and from all of the leading manufacturers. Irrespective of the accompanying announcement that the privilege of rejecting any and criticising all had been reserved, the communication met with the usual prompt response. The exercise of such a prerogative as this has become necessary, in order to prevent the usurpation of the function and usefulness of this committee, as well as the time and privileges of the general body, and with a fair and impartial consideration of all articles submitted the following have been selected for presentation:

1. *Riveting Forceps*.—A pair of forceps designed for the purpose of riveting the projecting ends of the pins to the backing in replacing broken facings in crown and bridgework. This instrument is nicely made; one beak presents a cushion of corrugated rubber, with a swivel joint, which admits of its adjustment to the porcelain at any angle and precludes fracturing it, and the other beak, also adjustable, presents a slight concavity for the enlargement of the end of the platinum pin by compressing it. In its use, if the facing is ground to fit the backing, and the pins are allowed to project through it about 1-32 of an inch, the attachment may be firmly secured by giving the arm a slight rotary motion while compressing the handles. The ease and facility with which facings may be thus securely attached, and the simplicity of the procedure, will at once recommend this as being a most useful device.

2. *Elevator Points and Handpiece.*—This exhibit consists of the models of seven elevator points, adjustable to a handpiece, which serves also as a holder for those not in use. With the exception of one which is a modification of the original design of Dr. Geo. Watt, they are constructed upon new and somewhat original lines, which, together with their compact form, strength, and variety of design, gives them a wide range of application and usefulness.

3. *Ligature Adjuster.*—This comprises a pair of double-end instruments, designed for the purpose of facilitating the adjustment of a ligature to the neck of the tooth, and pushing it within the free margin of the gum, for which their form and shape make them conveniently useful. The above selections are the product of the genius of Dr. Frank Brewer, Sr., of King City, Cal.

4. *Perfection Boltless Flask.*—This is an adjustable boltless flask, with bench plate and hand wrench. The principle upon which it is constructed, which consists of a threaded base and outer cylinder, admits of a ready adjustment of the two central parts of the flask when molding the vulcanite, but the small dimensions of the latter is an objectionable feature in an otherwise useful device.

5. *New Bull-Dog Forceps.*—This set of forceps, which are illustrated by drawings only, is of unique design. The beaks are short and heavy, and are supported by a supplementary or double hinge which is intended to increase the purchase upon a tooth with less effort on the part of the operator. Their usefulness, however, could not well be prophesied without testing their practical application. These two designs are the invention of Dr. Frank Brewer, Jr., of Watsonville, California.

6. *Automatic Orthodontia Soldering Clamps.*—These comprise a set of five clamps, designed to automatically hold the various parts of a regulating appliance in apposition while soldering. They are small, splendidly made, and are composed of an alloy which absorbs but little heat, which, together with the variety of form of points, makes them a most useful and convenient set of appliances for this purpose. Designed by Dr. H. A. Pullen of Buffalo, N. Y., and manufactured by the Buffalo Dental Manufacturing Company.

7. *Matrix Clamps.*—A set of two clamps and matrices, designed by Dr. R. B. Power of Green Bay, Wis. The matrices are made of thin, well-annealed German silver, with perforations which engage the points of the clamps. The latter are universally applicable, are

easily adjusted, and hold the matrix securely to the tooth, which makes them appear particularly useful.

8. *High-Fusing Oil Colors*.—These are a mineral paint, prepared in six basal colors, to meet the demands of the more artistically inclined practitioners. Their use admits of obtaining almost any desired shade or variation in a facing or inlay, as well as to more perfectly imitate the characteristics of the natural teeth. Manufactured by Mr. Robert Brewster of Chicago.

9. *Kerr's Anatomical Articulator*.—An improved anatomical articulator, designed by Mr. M. M. Kerr, of the Detroit Dental Manufacturing Company, at the suggestion of Dr. B. J. Cigrand of Chicago. This articulator presents features which seem to afford opportunities for a more perfect, accurate and scientific mechanical reproduction of the various movements of the lower jaw than any other. If models are properly mounted, they may be so placed as to bring the occlusal plane of the bicuspid and molars on a line with the hinge; the movements are easily adjustable to the requirements of the individual case; the parts are stiff enough to be rigid, and a full view of the lingual aspect of the teeth in arranging them is not obstructed; all of which are eminently desirable features.

10. *Converse Angular Beak Forceps*.—These comprise a complete set of forceps, prepared with converse angular beaks, which, because of their divergent lines of contact on either side of the tooth, increase the area gripped by the forceps, and no doubt lessen the danger of fracture. They are the invention of Dr. G. L. Bennett of Chicago, a member of this society.

11. *Fountain Tooth Spray*.—This hygienic apparatus consists of a bulb with multiperforated point, designed for the purpose of flushing the gums and irrigating the teeth with water or any antiseptic mouth wash, and may also be useful as a chip-blower. It is the product of the fertile genius of Dr. J. H. Woolley of Chicago.

12. *Partial Impression Tray*.—The difficulty of removing partial impressions taken in plaster may be overcome by the use of this style of tray. It consists of two small inner portions, with the dividing line in the center, and upon the removal of the outer tray the line of fracture is easily made by separating the remaining ones with the point of a small knife-blade, thus admitting of an accurate impression of the most difficult cases. Designed by Dr. E. L. Townsend of Los Angeles, Cal.

13. *Adjustable Bite Tray*.—This device consists of a flat, adjust-

able tray, designed to serve the purpose of unyielding base plates in taking the bite. While it answers this purpose and sustains the relation of the imprint of the jaws while removing from the mouth, the use of any such means for accomplishing this important procedure is objectionable, because no opportunity is afforded for observing the proper relations, for obtaining the desired restoration of contour, or for obviating the resistance offered by the wax to the normal closure of the jaw. Designed by Dr. T. F. Driskill of Corsicana, Texas.

14. *Antiseptic Floss Holder*.—The model of this little device is presented by Dr. J. W. Cowan of Geneseo, N. Y., and is a more simple and somewhat modified edition of his former design. It consists of a cartridge of antiseptically treated waxed floss silk, which fits into a recessed chamber to which a clamp and spring bow, provided with a spring hook on the outer end, are attached. The silk being drawn out of the cartridge as required for use is secured between the clamp and the hook, thus providing a taut section of floss. The operative part of the device telescopes into a tubular case much like the fountain pen, and is reversible, so that when in use the casing forms a handle, and a cover when in the pocket. A convenient cutter to sever the silk is also provided. When the floss is exhausted, the empty cartridge is discarded and a fresh one substituted. The device is made of nickeled metal and aluminum, and is about the same size and form as a small penknife.

15. *Plastic Spatula*.—A flexible spatula to be used in modeling plastic fillings, which seems to be especially adapted to approximal cavities on the distal surfaces of posterior teeth. Designed by Dr. B. L. Thorpe of St. Louis.

16. *Scott's Seamless Crown Outfit*.—The enthusiastic advocates of seamless crowns have no end of methods from which to choose, and yet will probably be interested in the device designed by Dr. W. P. Scott of Chicago for constructing crowns by this method. The apparatus consists of a tapering cylinder and plunger, and the crown is swaged over a metal reproduction of the desired form, by surrounding it with a lead matrix and driving the whole down into the cylinder, which compresses the gold instead of expanding it.

17. *Adamson's Seamless Crown Outfit*.—This device is very similar in principle to the former one, and differs only in that the swaging is done by surrounding the crown with fine shot instead of the previously cast lead matrix, and driving them down into the

tapering cylinder. Presented by Dr. C. W. Adamson of New York.

So many different apparatuses for constructing this style of crown are being constantly introduced, that it is difficult to ascertain which are the most useful, hence this will be left an open question to be settled by those who believe in the manufacturer's modest claim for the paramount advantages for his method.

18. *Universal Porcelain Instrument*.—This is designed for general use in the manipulation of porcelain, and is intended to embody all of the combined requirements of an instrument for the same. It comprises a spatula for mixing, a suitable point for carving, and a roughly serrated shank for packing the body. Designed by Dr. Hart J. Goslee of Chicago.

19. *Dunn's Combination Clamp*.—This clamp is designed as a quick separator for spacing the anterior teeth, for filling, finishing, for examinations, and to take the place of wedges, and at the same time to answer as a rubber-dam clamp. If the bow is in the way on one side, it can be easily and quickly changed to the opposite side. Designed by Dr. J. Austin Dunn of Chicago.

20. *Dunn's Combination Bottle*.—Designed for holding, preserving and dispensing medicaments from the original bottle, without danger of contamination. This bulb has a diaphragm or valve near its outlet end, which keeps the medicament from entering the bulb, and at the same time acts as a perfect cork. Designed by Dr. J. Austin Dunn of Chicago.

The following articles are submitted by the S. S. White Dental Mfg. Co.:

21. *Sadella Operating Stool*.—This is the design of Dr. Geo. H. Chance of Portland, Oregon, and because of its peculiar shape is especially adapted to the human anatomy. By thus affording a support to the base of the spinal column, a sitting position may be maintained while operating, which is a desirable feature.

22. *High-Fusing Porcelain for Inlay Work*.—Consisting of twelve bottles of various colors of body and a shade guide to match, a double-end carving tool, a pair of locking tweezers, a pipet bottle and spatula; the whole in a neat oak case. While the grade of body combines the requirements of strength, stability of form and translucency, the range of colors is inadequate for general use, unless one is expert enough to obtain a greater range by blending the basal shades.

22a. *High-Fusing Porcelain for Crown and Bridgework*.—This

outfit is similar in all respects to that for inlay work, except that the body is not ground quite so fine, and is therefore higher fusing, and that the increased number of colors to twenty-five includes a range which makes them more generally useful.

23. *Tweezers for Porcelain*.—Spring-tempered tweezers, with a sliding lock pin in a slot, for handling inlays or crowns, or for holding bands.

24. *Arkansas Points for Inlay Work*.—A set of six Arkansas stone points, designed by Dr. N. S. Jenkins, for polishing cavity margins for porcelain inlays. They leave a perfectly smooth surface, so that the matrix is not so likely to be torn when being withdrawn from the cavity.

25. *Knapp's Detachable Band Stud*.—An additional and very useful regulating device, enabling the operator to use any tooth band, and to attach the usual regulating appliances at any point where the band can be perforated.

26. *Knapp's Head Cap*.—A very neat contrivance of kangaroo skin and silk cord, light, cool and adjustable, and fitted with metal buttons for the attachment of rubber bands with the protrusion bow.

27. *Water Syringe No. 36*.—The pipe in this syringe is curved and fitted with a metal plate, and fills the bulb automatically when hung over the edge of a glass filled with water. By holding in the hollow of the left hand when grinding teeth the thumb and forefinger can be used for keeping the patient's mouth open, the syringe responding to the slightest pressure of the bulb.

28. *Gritman's Band and Crown Drivers*.—A set of four cone-socket instruments—(1) To hold a wooden point for fitting bands or setting hollow metal crowns. (2) For fitting bands for dowel crowns on anterior teeth. (3) Of bayonet shape for fitting bands to posterior teeth. (4) A bayonet-shaped driver, 3-16 inch wide, to enable the operator to reach any point of the band he wishes to drive into position. The usefulness of any instrument designed to drive a band to position on the root is questionable, however, when the same result can be accomplished with equal facility and much more comfort by gently pressing it to place with the flat, smooth edge of a piece of soft wood, held at right angles.

29. *Diamond Burs*.—A set of sixteen instruments, with soft steel heads, into which fine diamond dust has been incorporated. If run rapidly, and the points kept well moistened, they will be found very desirable in giving a smooth edge when finishing up cavities.

30. *Card System of Account Keeping*.—The outfit consists of three sets of guide cards, each set having a distinct color—300 white record cards, and a pad of examination blanks, inclosed in a Japanned tin or oak case. This method facilitates the rendering of bills, all paid and closed accounts being eliminated, and does entirely away with books.

31. *Contra-Angle Handpieces*.—The improved feature in these handpieces is the bend or elbow in the handle, which disposes the angular head to one side of the axis of the handpiece. This permits the head of bur, when placed in position, to be approximately in line with the axis of the handpiece, which construction avoids any tendency of the handpiece to turn in the hand or rock laterally when cutting out buccal or lingual grooves of cavities.

32. *Nose Cup*.—A glass cup, three inches by one and three-quarters inches in diameter, affording a gentle but effective means of irrigating the naso-pharyngeal tract.

33. *Gem Cavity Trimmers*.—A set of five small mounted gem points, especially adapted for cutting away overhanging enamel in the preparation of cavities. As the points wear from use they can be used in smaller cavities, and will cut until almost worn down to the mandrel. Can be used wet or dry.

34. *Vulcanite Trimmers*.—A set of three bayonet-shaped vulcanite chisels, about four inches in length, one with square edge and two with oblique edges, admirably adapted for accurate trimming up of vulcanite dentures, especially in the interstices; the short broad-based handle fits snugly in the palm of the hand, and is flattened on one side to prevent rolling.

35. *Peeso's Ladle for Fusible Alloys*.—A very convenient ladle for melting and pouring fusible alloys. Designed by Dr. F. A. Peeso of Philadelphia.

In conclusion, the committee desires to extend thanks to the various exhibitors for their courtesy, and particularly to the S. S. White Dental Mfg. Co. an expression of appreciation for mounting the exhibit in this most excellent manner.

Discussion. *Dr. E. H. Allen*, Freeport, Ill.: I am a little surprised that the S. S. White Dental Mfg. Co. should place before the dental profession to-day a system of keeping accounts, as they claim at the suggestion of Dr. S. H. Guilford, when the system is without doubt a copy of the Triggs' system, which was on the market long before the White Co. put theirs out.

COMPARATIVE STUDY OF THE ATTACHMENT OF
THE TEETH.

BY F. B. NOYES, D.D.S., CHICAGO. READ BEFORE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, JUNE 10-13, 1902.

That the teeth are not a part of the osseous system, but are appendages of the skin, supported in man by a special development of bone forming the alveolar ridges of the maxillary bones, is as well established as any fact concerning human dentition. The work of Oscar Hertwig, published in 1874, established very clearly the homology existing between the teeth and the dermal or placoid scales of the ganoid, siluriod, and dipnoan fishes, both as to similarity of structure and development.

Much has been written descriptive of the teeth of various animals, their modifications of form, and attachment to adapt them to modifications of function, and various classifications of the means of attachment have been made. Of these, perhaps the best and most logical is given by Charles Tomes in his "Dental Anatomy," describing four forms of attachment—1, by fibrous membrane; 2, by hinge-joint; 3, by ankylosis; 4, by insertion in a socket.

I wish simply to take up these various form of attachment, and show, if possible, the comparison between them and the evolution of the more complicated forms from the simpler. We must begin with an examination of the structure and attachment of the placoid scales and the simplest form of tooth, as illustrated in the shark. The dermal scales are composed of a conical cap of calcified tissue developed from within outward, by an epithelial organ, and corresponding in structure to the enamel. This cap is supported upon a conical papilla of calcified tissue formed from without inward, and corresponding to dentin. In the outer layer the arrangement of the fine tubules through the calcified matrix corresponds very closely to human dentin, but in the inner portions it is to be understood only by considering the formation of the dentin as progressing irregularly over the surface of the pulp and so dividing the pulp tissue into portions inclosed in large canals, from which the fine tubules radiate. The base of this partially calcified papilla has a calcified connective tissue built onto it by the derma, which corresponds to cementum forming the basal plate, spreading out more or less in the connective-tissue layer of the

skin, and into which the fibers of this layer are built, so attaching the denticle or dermal scale to the deep layer of the coreum. This tissue very exactly resembles cementum. It is formed on the dentin as the cementum of a human tooth is, and shows the connective-tissue fibers embedded in it. In the ganoids the basal plates of adjoining scales unite, forming the armor plates of such fish as the sturgeon and gar-pike, and the dentical remains projecting from the surface of the plates.

In the simplest teeth, as of the shark lamna, which are typical dermal scales, we have an exactly similar method of attachment, which may be taken as the simplest and most rudimentary, or attachment in a fibrous membrane. That is, there is no development or modification of the arch of the jaw, and the teeth have no direct attachment to the bone; in fact, the jaws themselves are chiefly cartilage.

The formation of the hinge attachment as illustrated in many of the fishes may be understood as a modification of the attachment in a fibrous membrane in a more highly specialized creature. These hinged teeth are found in many fishes and in the poison-fangs of snakes. The jaws are calcified, and the basal plate or cementum may be considered as confined to, or specially developed on, one side of the dentin papilla, which is also more highly developed, especially in snakes. This cementum is built and calcified around the fibers of the fibrous tissue which pass directly to the bone of the jaw at that point. This bone is to be regarded as an addition to the jaw specially developed for each tooth. We have then not only a modification in the arrangement of the cementum, but a development of bone for attachment of the tooth. The blood-vessels pass through the fibers of the hinge to the pulp, and are not affected by the motion of the tooth on the hinge; in fact, the pulp seems to be attached to the hinge. There are many complications of this method of attachment, but this may be taken as the type and the manner of its modification from the rudimentary conditions. The distinction, in this form of attachment, from the dermal scale consists in a modification of the arrangement of the cementum of the basal plate and a development of bone from the jaw to attach fibers which pass from cementum to bone directly. It should also be said that there are developments in the hinge teeth related to the third form of attachment, namely, ankylosis, which cannot be understood until this form is studied.

The third form of attachment, ankylosis, or direct calcified union with the bone of the jaw, cannot be understood without a careful study of the nature and formation of the dentin in these rudimentary teeth. It is evident, from a study of the dentin of the dermal scales, that compared with human dentin the tissue is rudimentary and not differentiated from other similar connective tissues. The tubules are comparatively very irregular, and resemble strikingly the tubules found in the secondary dentin formed by a degenerating pulp. The odontoblasts, or dentin-forming cells, are not like the highly specialized cell which form the primary human dentin, but resemble very closely simple spindle-shaped connective-tissue cells; the nucleus is larger and oval in form, and the protoplasm stretches off from it in one direction into a fibril instead of in two directions into a spindle. The cells are much smaller than human odontoblasts and nearer the size of ordinary spindle-cells of the human pulp. In fact, they look more like specially developed spindle-cells than odontoblasts. The formation of dentin begins on the surface, at the apex of a cone-shaped papilla of connective tissue, and proceeds inward. If the formation continues uniformly over the surface of the papilla, a solid layer of fine tubuled dentin results, but it often proceeds irregularly, apparently having special reference to the neighborhood of blood-vessels, so that irregular projections of dentin are found on its inner surface, dividing the pulp more or less into portions inclosed in larger channels or tubes. These may be very regular in arrangement and form around blood-vessel loops embedding the blood vessel in the calcified tissue, forming what has been called vaso or vascular dentin; but the formation is still from the surface of the pulp until it is obliterated, except for what remains in the larger canals. As distinguished from this formation of dentin we find in the body of the dental papilla of many fishes the formation of spicules of calcified tissue, shooting down through the substance of the pulp, which resemble neither dentin nor typical bone. They are more to be compared with the first formation of bone in membranes, or in the embryonal connective tissue of the body of the human jaw which is afterward removed by absorption and replaced by true Haversian system bone. These calcifications contain lacunæ, and have tubules or canaliculi running through them, and so, as Tomes says, are intermediate between dentin and bone. They divide the pulp into irregular spaces, and interdigitate,

or perhaps actually join, the formation of dentin which has been progressing from the surface of the pulp. These spicules run down into the bone of the jaw, forming an actual calcified attachment for the tooth with the jaw, but in this view of it it is to be regarded as a calcification or rather a formation of bone in the pulp-papilla interlocking with the dentin. In some of the fishes, as in *Scarus*, there is at the same time the remains of the cementum of the basal plate formed on the outside of the dentin around the base of the cone, which includes fibers which pass to the surface of the bone. Ankylosis is confined to the teeth of many fishes, and may be stated as a modification from the dermal scale, resulting in the reduction or loss of the basal plate and an ossification of the pulp continuing through the connective tissue at the base of the pulp to the body of the jaw.

The development of the fourth form of attachment, by implantation in a socket, seems to be an evolution starting from the same point but proceeding in a different direction. It is associated with the very great increase in the size of the teeth and consequent necessity for stronger attachment. This evolution is illustrated in the teeth of the reptiles. Wiedersheim classifies the teeth of reptiles as, 1, resting upon a ledge on the lingual side of the jaw, *pleurodont* dentition; 2, resting on the upper border of the jaw, with a slight ridge around them, *acrodont* dentition; 3, lodged in permanent alveoli, as in the crocodiles, *thecodont* dentition. These three classes illustrate three stages in the development of the socket method of attachment. In the simplest form there is a cone-shaped tooth attached to the bone around its base by fibers being built into the cementum and the bone. There is little modification of the rudimentary form and little development of bone for its attachment. In the higher form the tooth has become long or peg-shaped, and the bone has grown up around a portion of it to support it, but it is attached to the bone by connective-tissue fibers being built into the cementum on the surface of the peg and into the bone of attachment on the jaw. The development of the form of the tooth to the peg from the cone may be understood as a continuing of the development of odontoblasts and the formation of dentin (which always begins at the apex of the cone) farther and farther down on the sides of the dental papilla; then the formation of cementum which begins around the base of the cone and continues down on the outside of the calcified dentin, covering its outer surface and

building the connective-tissue fibers into the tooth. The development of the bone accompanies or rather follows that of the tooth, building the other ends of these fibers into the bone which is developed to support the tooth.

MODERN DENTIST FROM A MEDICAL STANDPOINT.

BY WILLIAM KNIGHT, M. D., CINCINNATI. READ BEFORE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, JUNE 10-13, 1902.

I believe that a student, when matriculating at a dental college, should be impressed that he is about to enroll himself as an aspirant to membership of what is termed a learned profession. He would thus at the beginning of his studies realize that his curriculum must necessarily be a comprehensive one, embracing all of the studies pertaining to the profession of which he hopes to become a member. I believe few of those who have given anatomic lectures to dental students will dissent from the statement that, with few exceptions, it is difficult to impress the dental student how important it is for him to acquire a practical knowledge of anatomy. This would not be the case if they would view the matter as they should, from a medical standpoint. Last year when in London I was informed by one of the examiners for English qualifications for American dental graduates, that most of the candidates were defective in anatomic and physiologic attainments. The reason for this lies in the fact that heretofore the dental student has not realized how necessary it is for him to acquire a practical knowledge of these two studies. The progressive dental surgeon of to-day is conscious that his knowledge of anatomy and pathologic anatomy is essential to him, for he sees almost daily diseased conditions in the mouth and its surroundings, the character of which can be understood only by applying the teachings of these two sciences. The dentist not infrequently observes morbid conditions in the mouth that are produced by some constitutional disturbance. He thus finds himself confronting questions pertaining to general medicine. For instance, he may find healthy teeth loosened in their sockets, perhaps an entire row of them. No other morbid conditions are apparent; there are no symptoms, nor have there been, of Riggs' disease; there is no absorption of the alveolar processes; no shrinking of the gum tissues. An examination is made of the urine, sugar is detected;

the diagnosis of diabetes is made, and the indications for treatment become clear. In this connection the following cases present features of interest: An English army officer suffered from a severe and continuous pain in his left eye. The oculist whom he consulted, after exhausting all means of relief known to him and affording none, decided upon enucleation. The operation was performed, but unfortunately the right, the unaffected eye, was removed by mistake. There was no relief obtained for the left eye by the operation. It was now decided that the mouth should be carefully examined, which would have been done before the right eye was removed if a dental surgeon had been consulted. The examination of the mouth resulted in the discovery of a carious tooth, and, although the tooth gave but slight discomfort, it was extracted. The result was most fortunate. The pain in the eye abated at once, and in the course of a few days disappeared entirely.

A few years ago I treated a young man for clonic spasms of the upper right eyelid. After some ten days' treatment, the condition remaining the same, I advised him to consult his dentist. He smiled at this, but did as I advised him. He returned a few days afterwards entirely relieved of the annoying affection. His dentist had discovered a small painless cavity, which he treated, in an upper molar tooth. The clonic spasms of the eyelid in this case were evidently associated with the carious tooth, and afford a good illustration of some reflex act excited through the sensitive filaments of the second division of the fifth cranial nerve, affecting thereby some filaments of the seventh cranial, a motor nerve. These cases are illustrative, and indicate consultations should be more frequent between the dental surgeon and the general practitioner, and especially with the ophthalmic surgeon. A large number of cases could be cited to prove the dependence of one part of the human body on another part, and if the teeth were selected for this purpose, a most interesting group exemplifying this could be collected.

The teeth, although anatomically regarded as dermal appendages, have a very close functional relationship to several of the cranial, and more remotely to some of the cervical spinal nerves. How frequently are inflammatory conditions seen in the face, neck and even the external chest, that owe their origin to disturbed nutrition, brought about by irritation starting in a diseased tooth. In this connection, a case recorded by John Hilton in his classical work

on "Rest and Pain" is worthy of full quotation: "A professional friend had an enlarged gland below the external ear, the real cause of which was not quite apparent, so he requested me to look at it. There was a slight discharge of morbid secretion in the auditory canal. We argued together, and I said: 'Very likely it may be the result of a decayed tooth; irritation from it may be conveyed to the auditory canal and induce morbid secretion. That morbid secretion may produce slight excoriation, and that excoriation, aided by lymphatic absorption, may explain the existence of the enlarged gland.' The tooth was extracted, all the other local morbid conditions disappeared, and there was no recurrence of the local symptoms."

This case proves that irritation of a nerve, the fifth cranial in this instance, is sufficient to lead to more or less change in function and structure, and that morbid influence may, after a time, induce a deterioration resulting in ulceration, etc. How important also it is that the dental surgeon should be able to diagnose in an early stage the various neoplasms so frequently seen growing in the mouth, lips, jaws and tongue. Especially is this of great moment in instances of malignancy arising in the regions mentioned. It not infrequently happens that a patient, having an incipient malignant growth of which he is not conscious, has pain in a tooth, the pain in the tooth being caused by the presence of the small, malignant tumor. The failure of the dentist whom the sufferer consults to recognize the existing conditions may result in the destruction of the patient. Two instances of this kind have come under my observation during the past few years. In both cases the malignant growth was sarcomatous. One originated in the antrum, the other made its first appearance in the molar region of the inferior maxillary bone. In each case the tooth had been extracted for the relief of pain. Some months afterward, when the patients came under my observation, infiltration of the neighboring soft parts had occurred to such an extent that a successful result could not be expected to follow even a most radical operation. On the urgent solicitation, however, of the patient suffering with a sarcoma of the upper jaw, I agreed to operate with the understanding that in all probability the affection would return. At the time of the operation, I removed half of the upper jaw, together with a large quantity of sarcomatous tissue from the surrounding parts. Growth returned after several months, the patient dying a few months

afterwards from exhaustion. I refused to operate in the other case, as the floor of the mouth, the gum and the cheek were extensively involved. I, however, used injections of Colley's serum (the streptococcus erysipelatio prodigiosus), so highly recommended in inoperable cases of sarcoma, with the result, however, of adding to the sufferings of the patient, who succumbed to his affection six months after I first saw him.

Much more frequent than neoplasms and inflammatory affections, that have their origin from dental irritation, are those instances that are purely reflex in their character, and that are excited through irritation of the dental branches of the fifth cranial nerve. Most of these cases can be diagnosed only by applying the general principles of medicine to their elucidation; the constitutional peculiarities or taints of the individual must be considered. A rheumatic, gouty or specific habit must be recognized before rational treatment in any given case can be decided upon.

For the reasons given in these brief remarks, it must be apparent that the dental surgeon of to-day must have a knowledge of the principles of medicine, and by virtue of his professional attainments he becomes a member of that great brotherhood, the medical profession, whose mission it is to relieve human sufferings.

PREPARATION OF TEETH FOR MICROSCOPIC STUDY.

BY MARTHA ANDERSON, M. D., MOLINE, ILL. READ BEFORE SECTION
ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION,
JUNE 10-13, 1902.

In decalcification the results have been far from satisfactory. In order to protect the dentin and get the pulp and dentin *in situ*, the slower methods of decalcification are better, but the delay has disadvantages. The acid mixtures penetrate and destroy the staining properties of the tissues and cause distortion: In order to save the pulp, the apical foramina have been sealed with collodion or sealing wax; this has not been satisfactory, as the sealing material comes off in spite of careful handling.

Nitric acid in weak solution gives slow decalcification. A 2 per cent solution, with frequent changing every few days, took over one month to give results. Lee says HNO_3 causes no swelling and does not injuriously attack tissue elements. This has not been my

experience, as it has caused much distortion and the tissue elements have been largely destroyed. It does, however, give fair sections of dentin.

Kleinenberg's method (Picric, 100 parts; H_2SO_4 2 parts; H_2O , 300 parts) is exceedingly slow, requiring several (5) months.

Schaeffer's recipe preserves the dentin, but the tissue elements are distorted and staining properties destroyed.

Von Ebner's solution took four months, dentin preserved, tissue elements distorted and stained badly, but not so badly as the others.

Boll (H_2CrO_4) gradually preserves dentin (two months), tissues distorted.

Haug's method (Phloroglucin 1, HNO_3 10, water 100) is rapid and has the advantage of penetrating dentin; the pulp tissue, however, is distorted and stained badly.

Huber's recipe (HNO_3 5 parts, HCl $\frac{1}{2}$, H_2O 100) is rapid, requiring only a few days. It also causes distortion.

H. Smith's recipe (HCl 10 per cent, 12cc, 16 hours; and HNO_3 1.5cc, 46 hours; 1.5cc HNO_3 , 66 hours) acts rapidly, entirely destroying the dentin and pulp structure.

H_2CrO_4 55 (H. Smith) is rapid, 8-9 days, destroys dentin and structure of pulp.

Andrew's solution is the only one that has given me any results that I can call good. (H_2CrO_4 140, HNO_3 6, water 400.) Its disadvantages are its very rapid action, the solution in full strength completely destroying the entire tooth in a few hours. I have gotten results from using half strength and changing very frequently, about every hour. If the tooth is forgotten for a few hours it is apt to be destroyed. If one is required to give attention to other matters for a time the specimen must be removed from the solution and placed in water, returned to the solution again when convenient to watch it. Even then decalcification is apt to take place unevenly, and sometimes in spite of great care the pulp is attacked and partly destroyed by the acid. After this solution sections have stained very well.

In preparing pulps for microscopic study, the pulps were removed from fresh teeth and hardened in Müller's fluid. Flemming or formalin have given the best results. For staining cellular elements a good hematoxylin combined with eosin or Van Gieson's method is very satisfactory.

As a special nerve stain, Weigert's method for medullated nerves

as follows: Harden in Müller's fluid, stain in a saturated solution of neutral acetate copper 24 hours, wash and pass into a stain composed of hematoxylin 1, alcohol 10, water 90, saturated solution lithium carbonate 1, for 24 hours. Then rinse in water and decolorize in borax 2, K. ferricyanid 2.5, water 200. The nerve will stand out a deep brown compared to the other tissues. In studying sections by this process the nerve trunks can be seen running from the apex of the pulp and branching off higher up, the fibrils running along the outer edge of the pulp just beneath the layer of odontoblasts. In a few cases I have been able to trace the nerve fibrils out between the odontoblasts, but not into the dentin.

In pulps hardened in Hermann's recipe the nerves can also be traced. In pulps prepared by Weigert's recipe the pulp stones (?) are stained dark brown as the nerves. If they are pulp stones, why do they stain thus?

So far the stains used for fibrous tissues and fat have been unsuccessful, but I have not yet completed my work in this line.

PARAFFIN—AN IDEAL MATERIAL FOR THE FILLING OF ROOT CANALS.

BY RUDOLPH BECK, D.D.S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT SPRINGFIELD, MAY 13-15, 1902.

We may attribute a large number of alveolar abscesses, failures of crowns, bridges and fillings, to imperfectly filled root canals. Considering the difficulty of following the irregular, tortuous and minute root canals, and the uncertainty as to the number of canals in some teeth, it is not remarkable that either portions or entire canals are left unfilled by the use of materials that are recommended, such as points of gutta-percha, gold, tin, lead, copper, wood or cotton, chlorid of zinc, cement, sandarac, etc.

The objection to these agents is that their introduction into the roots is not certain to reach and hermetically seal the apical foramen so as to prevent the invasion of pathogenic microorganisms into the canals or apical space. Another objection is that the cutting away of much tooth structure, especially in bicuspid and molars, is necessary in order to have sufficient space for the introduction of most of these materials, thus reducing the strength of the tooth.

In reading an article published by Prof. R. Gersuny of Vienna

(*Zeitschrift fuer Heilkunde*, 1900, Vol. I, pt. 9), in which he demonstrated that if paraffin at a low melting point be injected into the tissues of the body and allowed to harden it will retain its solid consistency, remain there unchanged, and not be absorbed, the idea suggested itself to me that this same material could be utilized for the filling of root canals, and I at once set out to make experiments.

Permit me to submit the result of my experiments and the technique employed: A mixture of paraffin 96 per cent, white vaselin 4 per cent, is placed in a porcelain dish and brought to a boiling point, and if it be desired to color the same, alkonet may be added while being boiled. The tooth in which the roots are to be filled, after all the contents have been removed, is placed in an aseptic condition and is thoroughly dried out with hot air.

I have employed two methods for the filling of root canals with paraffin: 1. By means of injection with Anal's metal syringe, or Luer's glass syringe, which have been previously sterilized and kept warm, filled with liquid paraffin, inverted and all air expelled by pressing upon the piston. The needle is screwed firmly to the attachment, and pressed again; the piston is to force the paraffin into the needle point. The charged syringe is placed in hot water until ready for use, in order to keep the paraffin in a liquid state. The root being ready for filling, the solution, which should be at a temperature of about 160 F., is injected into the tooth. It will readily flow to the desired points, where it shortly after becomes cooled and hard and remains so. In filling roots of the upper denture, the patient is placed in a reclining position or with head hanging. A heavy tin foil or a lead disc with a central perforation is placed over the orifice of the tooth, thus preventing the material from escaping. A straight point with the syringe is used. While filling the lower teeth the patient sits upright and a curved point is required.

The other method is to my mind preferable, especially in the lower denture. The roots are prepared in the same manner. A sufficient quantity of the mixed paraffin (previously boiled and allowed to harden and kept sterile) to fill the number of roots is placed into the tooth. A soft metal disc with a central perforation is placed over the orifice of the tooth, and a continuous stream of hot air conducted from an apparatus devised by Dr. J. C. Beck of Chicago will dissolve and force the paraffin into every minute opening in the tooth. It is then allowed to cool and harden. I have employed the method with

the material described in a large number of root fillings for the past twelve months with good results.

Conclusions.—1. That the material can be made absolutely sterile by boiling. 2. Readily adapted to the walls of the space it is designed to fill, and unchanged by the influences of the body. 3. Not necessary to cut away as much tooth structure for its insertion. 4. Less time to insert, and especially to remove. 5. Absolutely painless to the patient while being inserted, and no tenderness of the tooth, which is so frequently mentioned, after the roots are filled.

In this connection I desire to point out another utility of the mixture of paraffin and vaselin, employing the same technique as previously described, except that the paraffin should have a melting point slightly above the normal temperature of the body, between 99 and 109 degrees F. Injected beneath the mucous membrane lining the alveolar sockets of teeth immediately after their extraction and stoppage of hemorrhage, it will prevent the entire absorption of the bone. This is of great importance, especially in the preservation of the cuspid eminence, retaining the facial contour, and in cases where all the teeth have been removed and artificial dentures are to be substituted, the cuspid eminence will form the foundation for the setting up of artificial teeth.

Gersuny reports a number of cases in which he substituted paraffin for absent parts, and since his publication other well-known surgeons have employed his treatment, in pathological conditions of like character. Dr. Maszkowicz (*Wiener Klinische Wochenschrift*, 1901, No. 25) reports the injection of paraffin about the ends of a resected nerve, to prevent their union; also the introduction of paraffin between the joint after the breaking of an old ankylosis, to prevent recurrence of adhesions. A small opening between the nose and the mouth, left after staphylorrhaphy, was closed by paraffin. The best results in this treatment are obtained in the correction of deformities following cicatricial contractions from loss of tissue through disease or operative procedure. Last September I injected paraffin into the alveolar sockets of the upper cuspids. The opening became occluded with granulation tissue, and a few weeks ago when I last saw the patient, a decided prominence was noticeable where the paraffin injection was made.

Discussion. Dr. L. S. Tenney, Chicago: The requirements of an ideal filling material are—first, it must effect a perfect closure of the canal; second, it must be insoluble; third, it must not absorb the

fluids of the body, and, fourth, it must cause no serious disturbance in case it should be crowded through the apex of the root. The root canals of teeth have been filled with almost every conceivable material, but they have all been found lacking in some essential feature and been abandoned. To-day we confine ourselves almost exclusively to the use of gutta-percha, but we do not succeed in thoroughly filling the canals with it. In the distal canals of upper molars, the mesial canals of lower molars, and lower incisors, it is the exception rather than the rule to find one perfectly filled. I have examined several thousand extracted teeth, making longitudinal sections, and know whereof I speak. The reason why pulpless teeth do not give more trouble is not because the canals have been well filled, but because the teeth get along pretty well without it. However, the percentage of failures is sufficient to make necessary a material with which more definite results may be obtained. The ideal root filling must be one that may be introduced in a fluid state and then solidified within the canal, for any substance that is sufficiently rigid to enable us to force it to the apex of a tortuous root must necessarily lack that yielding property which will enable us to make a perfect closure. Gutta-percha is not a fluid, and while it is sufficiently soft to adapt itself to the surrounding walls, it is not rigid enough to enable us to force it home with any certainty. Paraffin meets all the requirements outlined above, but I apprehend some difficulty in mastering its manipulation. The essayist has advocated two methods. In regard to the first, it seems to me that we would have a great deal of difficulty in the canals in the posterior teeth not easy of access; and as regards the second, when this substance is melted it flows almost like water, and I should think that before we could force it to the apices of minute canals it would be driven out of the cavity around the edge of matrix. However, Dr. Beck has experimented for some time and has reported excellent results, so I believe that when the ingenuity of the profession has solved the problem of manipulation a new departure will be marked in operations of this character.

Dr. C. T. Gramm, Chicago: The idea of using paraffin for filling root canals is not new. I demonstrated its use in St. Louis, and "Filling Fine, Tortuous Root Canals" was the subject of a paper before a Chicago society in 1892. I believe the operation then suggested is more feasible and more likely to be successful than the method proposed by the essayist. I inserted into a fine root canal a copper point tapered to such a degree that it would easily enter; a

piece of paraffin was then placed about the copper point, which was left to protrude into the crown cavity, and a cautery knife heated to redness was brought in contact with the copper point. The paraffin immediately melted, and capillary attraction drew it to the end of the point and along the previously oiled wall of the canal. I do not to-day advocate this method, because, although ideal in theory, it does not carry with it that certainty of action which must be the cornerstone of all scientific work. Much less certain than the above, and I might say impracticable, seems the attempt to inject molten paraffin into fine root canals with a syringe. In speaking of filling root canals, I dwell only on those conditions which are difficult. For filling large accessible canals we have to-day no better means than we had years ago, namely, a solution of gutta-percha and eucalyptol, followed by a gutta-percha point. The difficulty that I believe the profession would have with Dr. Beck's method is in disposing of the air in the canal, as I cannot take it for granted that the hot blast would force the air out of the canal and the paraffin into it.

There is, however, a field for paraffin in oral surgery, and I would suggest its use in the curing of long-standing, chronic abscesses. I mean those where nothing will avail but incision of the gum at the apex of root, burring away of necrosed bone, smoothing of the apex of root as much as possible, and filling with paraffin the cavity thus created, care being taken to close the field of operation with a stitch or two in the gum tissue.

Dr. T. W. Brophy, Chicago: At the last meeting of the Northern Illinois Dental Society Drs. Hanaford and Sowle imbedded about sixty teeth in plaster, and sent them to as many operators, with the request that the canals be filled according to the dentist's usual method. About forty-eight were returned, of which fifteen passed as good fillings, but the others were defective, varying from no filling at all in the roots to a portion of some roots filled in certain teeth. I presume that even the most skillful operator, using the best material, does not always fill tortuous roots clear to the apex. If Dr. Beck has found a material which will show a higher percentage of success we shall certainly be indebted to him. The value of paraffin has long been known in surgery, and I think those who have discussed the paper have failed to remember that the essayist suggested its use in other ways. I can readily see how it could be used for all the purposes which Dr. Beck has outlined, and if successful it would be a great boon to dentistry and other professions, and to the community

at large. A great amount of suffering and disfigurement would be avoided by our patients and a great deal of time saved by us.

Dr. G. W. Dittmar, Chicago: It is not so much the filling material as it is the thoroughness with which root-canals have been previously treated, for if they are aseptic and dry, they will be all right when filled with almost any material that is non-irritating, non-absorbent and non-shrinkable. I should think that Dr. Beck's method would be very good for filling punctured roots. I would ask him if paraffin readily adheres to the walls of the canal.

Dr. Beck, closing discussion: Replying to Dr. Gramm, I do not claim originality in the use of paraffin, but if anyone used it previously he failed to record it, as I can find no record of its employment for root filling. If, as the Doctor states, it was used without success, this does not signify that we should discard it. The method has proved successful in my hands, as I have injected a number of teeth in and out of the mouth, and have found that the material penetrated the minute openings, so I claim it is an ideal agent when properly handled. Dr. Dittmar speaks of treatment being the most important point in root fillings, but roots do not always require treatment, and in a great many instances are filled without any, especially after the immediate devitalization and removal of pulp, when the roots could not be in a better condition. I mentioned in the paper that paraffin will adhere to the walls of the cavity. It is not dissolved by the fluids of the mouth or by water, but is solvent in alcohol.

LITHIASIS OF THE SUBMAXILLARY GLAND.—Lafarelle (*Revue Heb. de Laryng.—Jour. A. M. A.*) states that the pains caused by the presence of calculi in the submaxillary gland are frequently ascribed to the throat and ear, as they radiate in all directions. Two cases are described, one in a woman of forty, the other in a man of forty-five. Besides the functional and physical signs of salivary lithiasis, the paroxysmal pains, the alternating swelling and subsiding of a submaxillary tumor, the discharge of purulent saliva from the tumor on compression and palpation of a hard substance, the complete permeability of Wharton's duct for the catheter, indicated the location of the trouble. The preferable operation is the systematic extirpation of the submaxillary gland, as the acute inflammation caused by the calculi is certain to be followed by sclerosis of the gland. Even if the inflammation is slight, the gland should be removed to prevent recurrence. The operation is simple and easy. The facial vein has to be severed, but the facial artery and the hypoglossus nerve are left intact. The insignificant scar is hidden by the lower jaw.

Digests.

PALATAL PARALYSIS.—By Dr. S. Erben, Vienna. The following case of paralysis of the palate will best illustrate the care necessary for the diagnosis of paralysis in the neighborhood of the buccal cavity. The patient was a grocer's assistant, aged 27, who had enjoyed perfect health till three weeks previously, when he was attacked with fever and general prostration. Ten days later he had so far recovered that he could return to work. About a fortnight after this he observed that he could not swallow as well as he usually did, every effort to swallow being followed by regurgitation through the nose or flowing back into the mouth. There was no hoarseness



or cough, and the tongue and lips were intact, while speech was perfect. The mucous membrane of the throat and mouth was pale, no inflammation to be observed anywhere, while the tonsils were barely visible. Nowhere was there any white deposit. There was no adenoid growth on the posterior surface of the fauces, but it was observed that the uvula was asymmetric, as both the palato-glossal and the palato-pharyngeal arches were to be seen distinctly deviated to the left side, while nothing but the anterior arch could be seen on the right, as the former quite covered the latter. When at rest the arches of the palate were seen as in Fig. 1, but when phonation was performed the appearance was as in Fig. 2, which showed the healthy muscles of the right side dragging the uvula to that side.

From this asymmetry it was clear that unilateral paralysis of the palate was present; the drooping state of the palato-pharyngeal arch and the disappearance of the right arch, together with the difficulty in swallowing, all pointed in this direction, unless indeed the asymmetry were due to hypersensitiveness of the right side. The phenomena remained stationary during the following two weeks' treatment, while the electric current produced no tangible effect.

The following epitome may be repeated for a clear comprehension of the case. The complete elevation of the velum palati on the right side proved the integrity of the levator veli palati muscle as well as the circumflexus or tensor veli palati, while its hyperextension would be due to the loss of outward traction in the palato-pharyngeus. The passive uvula retaining its normal position till disturbed by the displacement in the other parts by unequal forces, such as phonation, while the posterior pillar of the fauces hung down loose, pointed to the paralysis of one isolated muscle, viz., the palato-pharyngeus.

After three weeks' treatment deglutition was performed quite freely. Inspection proved both sides of the posterior velum palati to be equally distended and the arcus palati normal in the power of distension.—*Medical Press and Circular*.

CALCIFICATION OF DENTIN AND ENAMEL, AND ITS RELATION TO HYPERSENSITIVENESS IN THESE TISSUES. By I. N. Broomell, D.D.S., Philadelphia. Read before the Pennsylvania Association of Dental Surgeons, April 8, 1902. Recognizing in the beginning that there can be no better way to study the physical characteristics of the tissues of an organism than by an examination into its mode of development, your attention will first be directed to the process of calcification in two of the tooth tissues, the enamel and the dentin, with a view to establishing, if possible, the manner by which the hypersensitiveness common to these tissues is brought about.

Both enamel and dentin in their normal state are practically devoid of sensation; of the latter it may be said that it possesses sensation to a slight degree. The only sensations conveyed to the brain through the pulp are those of pain, and we find therefore that the pulp with its many nerve filaments is not at all active as the organ of the sense of touch in the tooth, but that this belongs to the alveolo-dental membrane. For the reasons above stated, therefore, the term hypersensi-

tiveness is used instead of sensitiveness, to distinguish it from slight normal sensations.

In enamel we have a characteristic epithelial tissue, a structure largely made up of cells with little intercellular substance. In dentin we have a characteristic connective tissue, with the intercellular substance predominating. While the source and mode of development of these two tissues are entirely different and independent, they are so closely associated during this process and after its completion that they are sometimes spoken of as intermingling one with the other. This intermixture, if present, is brought about by the passage of the terminal ends of the dentinal fibers beyond the dentin into the enamel. While the microscope reveals in some instances what appear to be prolongations from the dentinal fibers penetrating the enamel, or between its prisms, it is one of the objects of this paper to show that such a condition is improbable, if not impossible. If this condition is present at all, it is so slight as to have no influence whatever over the enamel, either as to its nourishment or its sensation. No conclusions can be drawn with positive certainty from sections, since the slightest deviation from parallelism in the surfaces may easily produce deceptive appearances. It is just as common, and even more so, to find hairlike lines interwoven and running parallel to the surface of the dentin immediately between this tissue and the enamel, as it is to see slight fibers crossing beyond their boundary line to penetrate the enamel. The most likely place of all to find such a condition would be in the beginning of calcification, and here it is never observed.

After the dentin germ has assumed the exact size of the dentin of the future tooth, certain cells appear on its periphery, and under their superintendence a definite layer of dentin soon results. This first-formed layer of dentin is definite and unchangeable in location, and it has within its substance the minute processes from the dentin-forming cells which are destined to become and really are the terminals of the dentinal tubules. All who have given the subject of dentin calcification careful consideration are practically agreed as to the part which the peripheral pulp-cells play in the process. This is to the effect that not about the body of the cells themselves, but around their processes, the lime salts are deposited. After a distinct layer of specialized cells has become fully established upon the very periphery of the papilla, the first change which takes place is a slight withdrawal of these cells from this point, leaving behind slender hair-

like processes which occupy a portion of the space previously taken up by them, and about the extremities of the cells and their processes which are directed toward the enamel organ calcified material is generated. Zone upon zone of calcified dentin appears in this way, the body of the cell receding, leaving in its wake its processes encapsuled within the calcified structure as the dentinal fibers.

Now, what do we observe here favorable to the theory which it is proposed to sustain in regard to the terminal branches of the dentinal fibers? At no time do we find the peripheral pulp-cells, usually all classed as odontoblasts, outside of their own territory, the dentinal papilla; but their location in the beginning on the very surface of the papilla, almost in direct contact with the inner tunic of the enamel organ, would make it possible for their processes when appearing to penetrate between the cells of the enamel organ if they were grown out from the body of the cells from which they spring. This, however, they do not do. They do not grow out from the cell body, so to speak, but the cell recedes, leaving them behind. By this arrangement the terminals of the future fibers (?) become definitely established, all increase in length taking place in the opposite direction, toward the pulp. While the active enamel-forming cells are present some little time prior to the odontoblasts, calcification of the enamel does not take place until after a definite cap of dentin has been formed, imprisoned in which are the terminal branches of the fibers (?). Therefore the fact that this cap of dentin is formed first, and this is not a question in dispute, with the fibers or cell processes securely encapsuled within, it would seem to be sufficient evidence to qualify the statement that the so-called dentinal fibers do not penetrate the enamel. The examination of many sections of young growing teeth exhibits the fact that the early-formed dentin and enamel will separate bodily, leaving a positive clear line of separation and a surface absolutely devoid of anything resembling the prolongations of the fibers extending from the surface of the dentin.

The growth of enamel, stratum upon stratum, from within outward is generally believed to be by the direct calcification of the enamel cells or ameloblasts, and while this is going on, and as long as the crown of the tooth is encased in its epithelial cap, the enamel organ, the growth of the tissue is stimulated through the blood-vessels everywhere present in the stellate reticulum. The presence of this specialized blood supply to the central portion of the enamel organ was for

a long time doubted, but at present it can be readily observed. As soon, however, as the tooth passes through the surface tissue, carrying with it the external epithelium of the enamel organ as the enamel cuticle, the possibility of nourishment has been cut off, and after a little time it becomes a petrified dental epithelium no longer nourished and absolutely non-vital.

That the enamel is practically of inorganic material and therefore not capable of transmitting or receiving sensations may be demonstrated by the simple experiment of immersing a thin section of this tissue in a weak solution of chromic acid, the result of which will be a speedy separation of the enamel prisms which have been liberated by the destruction of the interprismatic substance. What does this signify? Chromic acid is one of the best preservatives of organic tissue known, and if the cementing substances in enamel were organic, or even partly so, the prisms by this test would not be freed, but instead would become more firmly cemented together. Therefore we infer from this that the interprismatic substance is even less highly organic than the prisms themselves, these not being acted upon until after the material which holds them together. Notwithstanding all this we have it said that the dentinal fibers enter the enamel between the prisms and possibly nourish it and furnish it with sensation. If the argument thus far produced is reliable, and it may have a semblance of truth, being based upon considerable actual observation, the question of hypersensitiveness in this tissue as observed in superficial caries would appear to be one somewhat difficult to comprehend.

In the synopsis of this paper, given upon the printed announcement of this meeting, the question is asked, "Do sensory nerve filaments traverse the dentinal tubules and penetrate the enamel?" While it is generally believed that the contents of the dentinal tubules not only transmit sensations, but also carry a sort of fluid from the blood plasma, no positive proof has ever been offered in support of this opinion, nor is it the intention of your essayist to discuss this question at this time, the effort being to add some little to the literature on the subject, taking exception, however, as to the character of the tubular contents and to that portion of the general subject which refers to the passage of the fibers beyond the dentin into the enamel.

In connection with the primitive layer of dentin-forming cells, there are usually described lateral processes passing from cell to cell, apparently serving the purpose of communication between the cells.

But these have recently been shown to be simply a network of connective-tissue fibers suggesting the body of the cells, but even were these acknowledged to be processes belonging to the body of these peripheral pulp-cells, their presence would not interfere with, but rather favor the theory about to be advanced. The theory of Andrews, brought out some years ago in regard to the specialized layer of pear-shaped cells, dentin corpuscles, as he termed them, may be accepted, and these will be considered as having something to do with the process of dentinification. The presence of these pear-shaped cells at the beginning of calcification and during the continuance of this process can be easily demonstrated, and if we accept them as being concerned in the process of dentin formation they might in a measure modify the function now accorded the elongated club-shaped cells, the odontoblasts.

In young tissue there is present, besides the odontoblasts and pear-shaped cells above referred to, numerous racemose cells which appear to be individualized. And these, as well as the pear-shaped cells, may take some part in the structural formation of the tissues. The idea which it is desired to bring out is as follows—that the odontoblasts alone are not responsible for the growth of dentin, that they undoubtedly control the actual process of lime deposit, but the additional cells, no doubt, contribute to the structural make-up of the tissue. It may be that by modifying certain parts of the matrix, the result in the general structure is the dentinal sheaths; this part of the tissue being so markedly different from the bulk of the intercellular substance would lead us to believe that it was developed from specialized cells. Further, it is desired that the fact shall be understood that while the dentinal tubules are filled with a living substance, this substance is not solely the product of the processes of the odontoblasts. That there is a special distribution of non-medullated nerve terminals as well as a rich plexus of blood-vessels about the periphery of the pulp is unquestionable, and this supply is just as plentiful, or perhaps more so, at maturity as it is at the beginning of calcification, when the dentin cells are most active. From this we might be led to believe that this special blood and nerve supply to the periphery of the pulp is not solely for the upbuilding of the dentin and therefore distributed to the peripheral cells, but also for the permanent welfare of the resultant tissue, this being brought about by some circulatory system throughout the tubules of the dentin. A portion of the contents of the dentin tubules appears

to be a perfectly solid and homogeneous substance, and that it is of the fibrous nature can be proved by the remarkable degree of extensibility present. This is especially noticeable in specimens made from young teeth, in which case the body of the cells in contact with the forming dentin may be pulled back from this point a considerable distance without rupture of the process.

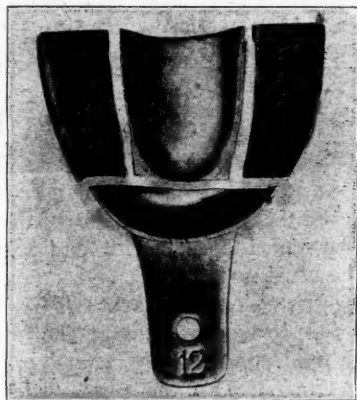
Let us now try to satisfy ourselves as to what these tubules contain, and ascertain in this way the manner by which sensations are conveyed from the surface to the interior. It has never been fully demonstrated that true nerve-fibers enter the dentin along with or in the substance of the dentinal fiber. Some contend that the contents of the tubules are made up of, first, a creative portion, that given off directly from the odontoblasts; second, a circulatory portion, a minute vessel traversing each tubule, entering either by the side of the cell bodies or passing through them, and that the nerve terminals are distributed in the same manner. Others say that minute nerve filaments from the pulp pass directly through the odontoblasts and are continued in the center of the tubule surrounded by a simple connective tissue, the cell process, and that in this way sensations are conveyed.

With all due consideration for these opinions, your essayist, after careful research, aided by many specially prepared sections, desires to offer the following in reply to the question under consideration: That dentin is a highly organized connective tissue; that it has a circulatory system and is endowed with sensation to a slight degree; that these conditions are brought about not by actual entrance in the tubules of separate vessels and nerve filaments, but more in the way of the tubules being occupied by a general connective tissue substance resembling in all essential features the pulp itself, being the semi-fluid interfibrillar ground substance of the pulp; that the processes from the odontoblasts and possibly those from the other cells named enter the tubules is not denied, but that they do so to a limited extent only is asserted; that dendrites of sensory neurons everywhere present in the pulp after losing their medullary sheaths divide into fine varicose fibers and become closely associated with the peripheral cells and pass between these and enter the cone-shaped openings of the tubules and terminate soon after doing so; that the cause of hypersensitiveness in the dentin is due not to the fact that the nerve terminals themselves have been irritated, but that this irritation has been conveyed to them as they lie deep in the substance of

the dentin through the semi-fluid circulating substance penetrating the tubules to their utmost terminals.

Now as to the manner in which painful sensations are brought about by mechanical or other irritation in the enamel, this structure which we have classified as being absolutely inorganic, a petrified dental epithelium and therefore devoid of nourishment and sensation. The term painful sensation has been employed in this connection because, as before stated, no other exists, what may be regarded as the sense of feeling or the sense of touch being conveyed to the brain through the medullary nerve-fibers which have their free endings in the peridental membrane. The painful sensations it is believed can be explained from the fact that cases of abrasion and superficial caries confined to the enamel alone become after a time sources of irritation to the tubular contents, which in turn convey the irritating effect to the pulp itself.—*Brief, June, 1902.*

PLASTER IMPRESSIONS. By Jose Valderrama y Barrenechea, Philadelphia. Every dentist is familiar with the difficulties which accompany the taking of plaster impressions of mouths in



which some or all of the teeth are present. These difficulties are further increased when the teeth are irregularly placed and when their direction is such that the impression cannot be removed, we will not say without breaking it—for that is almost an impossibility—but without fracturing it into so many small and irregular pieces that

the operation of fitting them together with wax becomes not only a very long, but also a very tedious task.

To avoid these difficulties we have adopted the following procedure which has given us satisfactory results, and which we believe will be especially useful to orthodontists, this class of practitioners being more likely than others to be called upon to take impressions of mouths in which all the teeth are present. The method is as follows: An impression tray suited to the particular case is divided into *four pieces*, as shown in Fig. 1, the front piece embracing the incisors and possibly the cuspids, the two lateral pieces the teeth be-



yond the cuspids, and the fourth piece the roof of the mouth. The four pieces are then waxed together with hard wax and the impression is taken in the usual way.

In removing the impression, the purpose of having previously divided the tray at once becomes manifest. The front section is first broken away—the *fracture necessarily following the front dividing line of the tray*. (Fig. 2.) Then the lateral sections are removed in like manner, and finally the palatal portion. Each section of the divided tray carries with it its corresponding section of the impression, yielding a matrix in four parts (Fig. 3.), readily adjustable by reason of the large fracture surfaces of plaster which serve as guides in accurate coaptation. After all the sections are reunited with wax the impression is ready for the further steps usually taken in the

preparation of a cast. This plan of procedure is also very useful in view of the fact that it obviates the troublesome and annoying operation of first removing the tray and then cutting the impression.

It is of course to be understood that it is not imperative or essential



to cut the tray always into four pieces only. If the practitioner judges that by cutting it into five or more pieces the operation is further facilitated in a given case, that should be done, the principle involved in this procedure being simply to divide the tray in such a way that the impression shall be fractured into large and regular pieces predetermined in size and direction by the section lines of the divided tray.—*Cosmos*.

RESTATEMENT OF THE PRINCIPLES OF EXTENSION FOR PREVENTION AND SOME CORRELATED SUBJECTS. By G. V. Black, M. D., D.D.S., Sc.D., LL. D., Chicago. Read at the annual clinic of the G. V. Black Dental Club, St. Paul, 1902. In articles which I published in the Dental Cosmos in 1891, entitled "The Management of Enamel Margins," I first used the phrase "extension for prevention" as expressing a prominent fact in the methods of procedure which I was advocating in cavity preparation in proximal decays. Judging from the amount of discussion which this phrase has provoked, and the widespread betterment of filling operations in these surfaces which has resulted, I must conclude that the

use of this phrase has been particularly fortunate in aptly expressing a method of procedure that is in itself important. Although this expression can no longer be regarded as belonging exclusively to me, by reason of its having been taken up and pushed in discussion by many others, notably Drs. Wedelstaedt and Johnson, still I may be excused if at this time I make a restatement, from my own point of view, of its meaning and of its proper limitations in practice after the years of study that have elapsed since it was first announced.

I may say that the incentive to write the papers on the management of enamel margins was obtained through the attempt to conduct an extended series of clinics for the benefit of the students of the Chicago College of Dental Surgery when I was connected with that school, and critically noting the procedures employed by a large number of excellent operators. The close study that I had given and was giving to this subject in my own practice, which I now see was peculiarly well adapted to this class of study, convinced me that the manner of teaching methods of practice and the training of dental students in manipulative procedures were faulty in the extreme, and I was filled with the notion that more definite methods should be devised and employed. My private practice had long been what is termed a family practice, in which many families of children grew up under my care; and in whom I could study the results of treatment in a wide variety of cases from youth up. My system of records, while not very elaborate, was such that I could conveniently make these studies with great accuracy as to the date of operation and methods employed and note the results.

One of the most important steps in these studies, though the wording in my articles of 1891 was not just what I would now wish, was the sharp division of cases of recurrence of decay after filling into two classes. First, those due to the faulty manipulation of gold in packing, or the failure to make fillings completely watertight; and second, those cases of recurrence of decay from an actual rebeginning of the carious process upon the surface of the enamel beside the filling, which was in itself perfect. When decay recurs from faulty manipulation of gold, or imperfect adaptation to the walls and margins of cavities, it begins between the filling and the cavity wall and runs under the filling as far as the adaptation was originally imperfect. This is recurrence from leakage. In the second case the recurrence of decay is close beside the filling, but careful examination shows that it has not run between the filling and the

cavity wall, but is in fact a new decay that has started in the enamel beside the filling and is penetrating the dentin in the manner and form of a decay that has started anew superficially. This will usually be semi-circular in form, the gold filling occupying one-half of what would be the usual circular form of the cavity, and otherwise penetrating as an original decay. In proximal cavities as formerly prepared it was particularly noted that these occurred at the rounded angles of the fillings at the bucco-gingival and linguo-gingival in much greater frequency than elsewhere. And also in buccal and labial cavities, in which in those days decay was proverbially prone to recur, a similar recurrence would appear to the mesial and to the distal of the filling; or to the gingival if this margin were not overlapped by the free margin of the gum.

These classes of recurrence of decay when studied with accurate records as to dates at which the fillings were made led to the adoption of means to prevent them. The first class, those from faulty adaptation of filling material, of course led to improvement in methods of packing gold, which in itself might well form the subject of an essay, the principal key to which is the management of the force used, and especially such stepping of the plugger as will constantly bring the condensation against a wall into the form of a wedging of the gold between the cavity wall and the gold already condensed. But this must now be passed with this remark. With it extension for prevention has nothing to do.

The superficial recurrence of decay, or that which formed a new cavity beside the filling instead of penetrating between the cavity wall and the filling, required a different treatment. The fault lay beyond the manipulation of gold and must needs be looked for in the plans adopted in the preparation of the cavity. The important fact was that an area of tooth surface that was especially susceptible to future decay was left beside the filling, and this should have been included within the original outline of the prepared cavity. To do this required the judicious extension of the cavity at this important point; and this was denominated "extension for prevention." This consists essentially in squaring out the bucco-gingival and linguo-gingival angles of the otherwise rounded gingival portions of large or medium large cavities in proximal surfaces, making the gingival wall flat bucco-lingually; while smaller proximal cavities were cut to a medium size and similar form when prepared in the teeth of those very susceptible to caries, and especially in children and young

people. If the gum septum did not already overlap the gingival margin, extension was made gingivally to attain this. This squaring out of the linguo-gingival and bucco-gingival angles necessarily carried with it the cutting of the cavities of equal width to the occlusal surface, or to parallel buccal and lingual walls, for the purpose of facilitating the placing of the filling material. It had already been demonstrated to my own satisfaction that this practice was successful in preventing this form of recurrence of decay.

In a paper before the Illinois State Dental Society in 1893, entitled "The Anchorage of Proximate Fillings in the Bicuspids and Molars," this was supplemented by showing that the probable force of the occlusion was such as to require that all of these fillings be anchored in a step cut for the purpose in the occlusal portion of the tooth, even though decay existed there, instead of depending upon grooves or dovetails cut toward the lingual and buccal in the proximate cavity, as had been the general practice. Coupled with this was the seating of the filling upon a flat gingival wall, and a flat pulpal wall of the step portion to give it still greater stability. In this presentation the force of the occlusion of the human teeth was discussed and the fact pointed out that the dental profession had then no knowledge of its amount in pounds, and the statement made that it probably reached hundreds of pounds. This discussion led quickly to the devising of instruments for the measurement of the force of the bite; notably one by the late Dr. J. J. R. Patrick, and one by Dr. George J. Dennis, called the gnathodynamometer. The first of these made were soon shown to be insufficient in their register of pounds, and had to be strengthened to full three hundred pounds before the measurement of the force of the bite of the strongest persons could be accomplished. My own instrument, which I have used since 1894, registers two hundred and seventy-five pounds and every year when I take the register of my senior class I find from one to two in each hundred persons who will close it; and evidently could register a greater number of pounds. This abundantly confirmed the necessity for the greater strength of the seating and anchorage of these fillings, as had been contended, and this has become the accepted practice by those who have followed these investigations with a fair degree of accuracy.

But this much was only a part of the program of improvement of method that had been proposed in the papers of 1891. The study of the normal form of the contact point between proximal

surfaces and of the interproximal space, and the influence of variations in these forms in preventing or in affording opportunity for the recurrence of decay, were presented. The necessity was urged that the best of rounded or marble-like contact points be formed on proximal fillings to maintain the breadth of the interproximal space, and as the form best suited to prevent injury to the gum septum by food lodgments which would soon produce disease of the periodontal membranes, or conditions favoring recurrence of decay at the gingival margin of the filling. Something of this had been urged before under the term "knuckling," but under this term no accurate studies of tooth surfaces or of the forms of the interproximal space had been made, and after careful consideration of the term and its loose use I decided that the more accurately descriptive term "contact point" would best suit the case and the studies of the surface that were given. Before that time most operators were finishing the proximate surfaces of fillings flat with the separating file. Even those who were making some study of contour, and were making contour fillings, so-called, were still finishing the central portions of these surfaces flat instead of to that marble-like roundness which is the normal form, and that will prevent lodgment of food. For that reason even many of the larger fillings were still failing at the gingival margin because of the lodgment and the fermentation of food, even though the manipulation of gold had been otherwise perfect. And, strangely enough, as it seems to me now, the cause of this was persistently overlooked. This seems to have been true in some measure of the work of the lamented Dr. Marshall H. Webb, who in his manipulation, both in cavity preparation and the formation of the contour of proximate surfaces, approached most closely the forms recently advocated. It seems, however, that he was unable to put his plans of procedure aptly into descriptive words, probably from the want of a sufficient knowledge of dental anatomy and the lack of terms in which to express his thought.

Another feature that was causing the unnecessary loss of many teeth was the prevalent notion that some teeth were soft and therefore decayed readily, while other teeth were hard and because of that fact resisted decay. The so-called soft teeth did not receive that vigorous treatment which the conditions demanded, because of the feeling that treatment would fail. A series of studies published in the *Cosmos* of 1895 showed that this was a delusion, and estab-

lished the fact that there is no such difference in the solidity of the teeth as will serve as a basis for such a thought. For all practical purposes of resisting decay and receiving metal fillings, the teeth are of equal density whether the patient be young or old. The accuracy of these findings has been sufficiently determined. The cause of the more rapid decay of some teeth than others must be looked for in their environment, which will be discussed later.

These studies taken together have placed the treatment of proximal decays and buccal decays upon a basis so different from the former conceptions of the case as to form practically new plans of procedure and new rules of practice differing essentially from the old. But this practice is not or should not be founded upon these studies alone. They serve only for the development of the technical or mechanical side of the case; the pathological side is left without consideration, or is studied only in the empirical way by noting and comparing conditions at different times. This is supplied by a study of dental caries and its methods of attack. In this paper I can mention only those fundamental features of the most practical character. First of all it should be noted that decay attacks the teeth only at certain points, called areas of susceptibility, and that all other portions of the tooth surface are immune to the beginnings of decay. This is so pronounced that any one of us, in examining a mouth, will invariably give attention to certain portions of the surface of each tooth, its areas of susceptibility, not expecting to find decay beginning elsewhere. For the practical purposes of this discussion these points of beginning of decay are of two classes, the pit and fissure class and the smooth surface class. The first is confined to pits and fissures of the occlusal surfaces of bicuspid and molars, pits near the junction of the occlusal and middle thirds of the buccal surfaces of the molars, and pits in the lingual surfaces of the upper incisors. With this class extension for prevention as employed on smooth surfaces has nothing to do whatever, for the reason that in them decay does not recur about fillings except as a result of imperfect operating. It is true in these that grooves must be cut out sufficiently to get a margin level enough for a smooth finish, constituting an extension of the cavity, but this is for a different purpose from extension for prevention in smooth surface decays. The second class includes those decays beginning in the proximal surfaces and in the gingival third of the buccal and labial surfaces of the teeth. Decays occur on

other less susceptible smooth surfaces, as the lingual; but so rarely that they may be ignored in this discussion.

It is to these decays in smooth surfaces that extension for prevention properly applies. The reason for its application to these and not to the pit and fissure class is found in the nature of the surfaces and their relation to that cleanliness produced by the normal uses of the teeth. The teeth have been so formed that the uneven surfaces, or surfaces broken by cusps, with grooves and pits between, are the occlusal surfaces, or those that are exposed directly to abrasion during mastication of food, and are therefore subject to frequent thorough cleaning by abrasive action in chewing, except in the immediate pits and grooves that afford permanent lodgment for debris. Caries always begins on the surface of the tooth—it is produced by microorganisms growing upon the surface of the tooth and acting upon that point and penetrating inward. They cannot act upon habitually clean surfaces or upon surfaces frequently cleaned. They must have more or less permanent lodgment in order to act. The result is that upon these surfaces the beginning of decay is confined actually to the pits, fissures and deep grooves that afford this opportunity for lodgment. Therefore, in preparing them for filling, when strong enamel is reached in the cutting, and no deep grooves are left for the creation of pits beside the finished filling, there is no tendency to recurrence of decay in these surfaces; unless the filling is imperfect in its adaptation to the walls and margins of the cavity.

The conditions of the beginning of decay upon proximal surfaces and the gingival third of buccal and labial surfaces are different in several respects from those beginning in pits or fissures, and these differences call for radical changes in treatment and for a much higher order of judgment. Here we have only smooth surfaces; there are no pits and grooves that serve as special points of beginning. On the other hand, these surfaces are habitually more or less unclean. The proximal surfaces are brought into close contact, or near contact in varying degree, and are more or less so situated as not to be well cleaned by the motions of food over them during mastication. This gives more or less constant opportunity for the continued growth of microorganisms in contact with these surfaces, the formation of films upon them, and the beginning of decay. The greater liability is in the most unclean portions and modified liability is present as we pass from this toward the neighboring areas of immunity to decay. Therefore, when decay

has attacked the central portion of this area the tendency is for this attack to continue, spreading upon the surface toward the outer margins of the unclean area. If the central portion of the area be cut out when decay has first appeared, and a filling be made ever so perfectly, the conditions remaining otherwise similar, it will be only a question of time until decay will destroy the remaining portions of the unclean area immediately adjacent to the margins of the filling. This condition forms the basis of extension for prevention, which means simply that when these conditions are found, and they occur almost continuously in proximal cavities in young persons, the whole area of liability should be included within the outlines of the prepared cavity.

In the gingival third of buccal and labial surfaces the conditions are similar, though the forms are different. In the cases in which decays occur in these, the curvature of the surface is such that with the prominence of the gum tissue the gingival portion is not cleaned in chewing food, thus giving the opportunity for the beginning of caries. For this reason these decays are generally found beginning about the age of maturity, or later, when the free margin of the gum has shortened to about its full normal limit. In almost every case in which these decays begin at an earlier age, close inquiry will develop the fact that the patient is not using the teeth with normal vigor in chewing food. We find here a similar central area of greatest liability in which decay acts more quickly; with a lessening of the intensity as we recede from a given center, and with the constant tendency to superficial attack in a widening zone toward the angles of the surface where immunity is usually reached. Here, again, if we prepare and fill the central area of decay early, and make the filling ever so perfect, we will, if the conditions remain the same, soon have recurrence, or the rebeginning of decay at the margins of the filling. Again we should apply the principles of extension for prevention, and in the preparation of the first cavity include the whole area of liability. Any other decays that occur in positions where similar conditions exist should have similar treatment. This expressed in brief the principles of extension for prevention and the classes of cases to which it applies.

A study of the areas of the tooth surfaces which are immune to decay becomes important in this connection for the reason that the extension is for the express purpose of laying the cavity margins in immune zones. The cavity margin must ever be regarded

as the vulnerable point and the effort be made to place it in an immune zone. It is especially important to study the immunity of the axial angles of the teeth with the reasons therefor. For it must be noticed that in all of these cases the extension is toward the axial angles of the teeth as the zone of safety. In doing this, the study of the anatomical forms of the teeth, the relations of the teeth to each other, and to the soft parts; and the relations of all of this to the excursions of food in chewing, is the important point. When these studies are carried out it will be seen that in the act of mastication food is parted by the contact point between the proximating teeth and sweeps through the embrasures onto the sloped surfaces of the gum septum to the buccal and to the lingual and out over and against the axial angles of the teeth. Thus we have habitual cleanliness about the angles, which explains the habitual immunity of these areas. Think over your cases and note how rarely you have seen decay beginning upon either of the four axial angles of the teeth. When decay is seen beginning upon the axial angles of the teeth, or running around them superficially, that person has practically ceased to chew food some time before this has occurred, unless, indeed, some special local cause exists. Then the closer the enamel margins are laid to these angles the better, in both buccal and labial cavities and in proximal cavities whenever the conditions call for extreme care.

It will be seen at once, I think, that this study affects prominently the two classes of smooth-surface cavities under discussion, i. e., proximal cavities and the buccal and labial gingival third cavities. In both of these the direction of the extension is toward the angles of the tooth, and represents the approach to the zone of safety.

I have frequently stated that if a central area of decay is filled and the *conditions remain similar*, recurrence will result. But will the conditions always remain similar? Certainly not. The conditions of susceptibility and immunity are continually changing. Susceptibility to caries is much greater in childhood and youth and the tendency is toward immunity with increasing age; producing marked modification of the susceptibility after the age of twenty or twenty-five years in most cases, and often earlier. The conditions have then become more favorable; and as they improve there is less liability to recurrence of decay when only very moderate extension has been made. For this reason much modification of the extension may be made in the cases of slight susceptibility to

decay, or in persons who have apparently arrived at immunity to the beginnings of decay. The difficulty is to judge of this with our present lack of knowledge of the conditions controlling immunity. The greatest extension is required, however, in children with a strong hereditary predisposition to decay, and the least in opposite cases. But we can never be sure the susceptibility will not recur.

In the treatment of these conditions an error of judgment has arisen in the minds of dentists, as has been mentioned, and which recently published studies should correct, viz., badly decayed teeth have been regarded as poor teeth, poorly calcified, teeth of poor quality, etc. This is in no practical degree true, especially in regard to the portion of the tooth under consideration. There is a difference in the depth of pits and grooves and in the occurrence of fissures in the occlusal portions of tooth surfaces that gives greater opportunity for decay in some teeth and less in others, because of differences in these faults. These are faults due to incompleteness of structure, not faults in chemical structure. Such faults do not predispose the teeth to decay any farther than giving opportunity for its beginning, nor in any degree prevent the teeth from standing well after proper and efficient repair has been made by filling. Such teeth are not poor in quality. If regarded in any degree as poor they are poor by reason of being incomplete in the closure of their grooves; as a matter of fact, such teeth are generally large, strong, with powerful cusps, and otherwise well developed. No such faults of incompleteness of structure are usually present in proximal labial or buccal surfaces. It is purely a matter of position with reference to food excursions in mastication and the fact of failure of cleanliness that causes these surfaces to have areas of susceptibility. This is the basis of the localization of the beginnings of decay at particular points of smooth tooth surface. Otherwise than has been explained imperfect tooth structure has nothing to do in the matter. The teeth of one person are as good as those of another; susceptibility to caries is a matter of environment. It is controlled by the nature of the secretions with which the teeth are surrounded, not by the quality of the teeth themselves.

The qualities of secretions must be sharply divided into localization of secretions or special protection to the growth of microorganisms, and general conditions of the fluids of the mouth; the one giving rise to local decays from purely local causes, while the other gives rise to a general disposition to caries of susceptible areas.

Recently a middle-aged woman presented herself to my clinic with conditions which prominently illustrated the first of these. Neglected decay in early life had caused the loss of a number of teeth in the upper jaw and of several in the lower. The loss in the upper jaw had been supplied by a plate which fitted closely to the necks of the remaining teeth, all of which were decaying badly on their lingual surfaces. In the lower jaw the fillings were standing well, all decay had ceased and the conditions presented were those of complete immunity. In this case the continuous covering of the lingual surfaces with the thick margins of a rubber plate had confined the secretions between the plate and the teeth and protected the growth of microorganisms in that particular locality and furnished the opportunity for the attack. The result was the same as would have occurred if bands had been worn upon the teeth without cement upon the lingual surfaces. The condition of local uncleanness had been made by the dentist. All such must be regarded as giving conditions of extraordinary opportunity, and sufficient to cause decay in the mouths of persons who are immune to the beginnings of decay under ordinary local conditions.

Then whenever we have the near approach of surfaces in such form as to favor uncleanness we have conditions favoring decay, whether these be artificially made or whether they occur through the particular forms of proximal surfaces. It is for this reason that we should generally extend cavities in proximal surfaces so far into the embrasures or toward the angles that approaching surfaces shall be well freed from each other at the cavity margin. The rule that the lingual cavity margin of mesial cavities in bicuspid and molars shall be so extended that it may be in view across the median line at the central incisors, and that others should be similarly extended, is a good one.

It is mainly the varying conditions of the fluids of the mouth that make for susceptibility or immunity to caries, with the varying conditions between, and it is to this that attention must be most strongly given in the future. Although decay occurs occasionally under conditions that make explanation extremely difficult with our present knowledge, I believe we can now discern and measure fairly correctly the influence of purely local conditions, and for the most part avoid evil results due to conditions which give special opportunity for the beginnings of decay, by correcting such as may be found to exist and so planning and executing our operations as not

to make others. But the management of the varying conditions of the fluids of the mouth which give susceptibility or immunity is still beyond our control. We can easily note their effects, however, and do much to modify resulting evils by controlling local conditions. General conditions are never so intense as to cause the teeth to decay all over; there are always immune zones of tooth surface in the worst cases of caries, though in some that I have seen every area of tooth surface that has been regarded as in any degree susceptible has been attacked. This, compared with the conditions in which the person goes through life without a spot of decay in the teeth, represents the extremes of susceptibility and immunity.

In those cases in which the evil results of decay are fairly controlled, and vigorous chewing of food is kept up by the patient, the tendency is to more or less complete immunity with advancing age. This is prominent enough for us to anticipate it as the rule in the cases we treat, and we should work to that end. This requires the most radical extension in the cases of extreme susceptibility, in order that the teeth may be protected during its continuance. When the condition of comparative immunity has been reached, or is found to be a characteristic of the particular patient, the extension may generally be less radical. If cases be carefully studied with this in view, much difference may be made within certain limits of comparative safety. And yet it must be remembered that susceptibility often recurs, and that even in cases in which immunity seems fairly established it is still unsafe to depart much from the general lines of moderate extension for prevention.

We often hear it said that such and such teeth have had fillings made without extension for prevention that have been in place for many years, and no recurrence of decay has been seen; the fillings have stood perfectly. Certainly this is true; I have myself seen many examples. In most of such cases immunity to the beginnings of decay has occurred in good time and saved the case from recurrence. If we had the account of the fillings and of the teeth that have been lost from recurrence, the list would be a much longer one. Where there is the least need of filling fillings stand best. Very poor fillings will stand in the mouths that have become immune. I long ago learned not to trust the stories of fillings apparently poorly made which have protected the teeth for thirty and forty years. The teeth would probably have done quite as well with empty cavities; fully as many examples of these that have

remained stationary for years are to be seen in persons fifty and sixty years old. If susceptibility recurs, these old fillings to which I have alluded fail to protect; and the teeth decay as though they were not there. I have recently seen a case of recurrence of decay in one of my own patients for whom I had made fillings, without extension for prevention, that had apparently protected his teeth perfectly for twenty-five years. Susceptibility recurred recently when he was fifty years old, and decay began at the bucco-gingival and linguo-gingival angles of every one of these excellent proximate fillings that had stood for so many years. If I had at first made radical extension in this case the very radical refilling required would not have been necessary. This and similar cases raise the question as to how far we may trust to continued immunity. Observations upon this point have not been sufficient for the formation of such judgment as may be relied upon with safety. The questions of susceptibility and immunity to decay of the teeth are comparatively new in the discussions in dental literature in the broader sense in which I should now consider them. Until more study of them has been made, it is certainly better to make our operations with the view of an ultimate return of a considerable degree of susceptibility than to run the risk of the complete failure that is liable to occur. With more study we may in the future become able to predict continued or permanent immunity with more certainty.—*Review, June, 1902.*

MODELING COMPOSITION. By Dr. Stewart J. Spence, Harriman, Tenn. The following experiments were made with the object of determining: 1st, what is the exact contraction of impressions taken in modeling composition at different degrees of temperature; 2d, whether the adhesion of the composition to the impression cup prevents or otherwise affects this contraction; 3d, whether a high heat of the composition is necessary in order to prevent a retraction (after withdrawal from mouth) of parts of the impression stretched in taking the impression; and 4th, whether an impression dragged out of form while being removed from the mouth will by retraction resume its proper shape.

As results of these experimental inquiries, it was found: 1st, that this excellent impression material contracts about 1-35 of an inch in six inches in falling from 110 to 35 degrees Fahr.; 2d, that the adhesion of the material to the tray has no perceptible effect on

this contraction; 3d, that a high degree of heat in taking the impression is not necessary to prevent subsequent warpage of the impression; and 4th, that its elasticity, even when the impression is tolerably stiff, is not sufficient to cause impressions when dragged in removal to fully resume their correct forms.

The experiments were conducted thus: *Experiment 1.* To determine the contraction of modeling composition in cooling. Modeling composition was heated and then pressed into the lid of one of the metal boxes in which vulcanizable rubber is supplied to dentists, this being, as we know, nearly six inches long. It was then cooled, and was next immersed in warm water, with just sufficient of one end projecting from the water to permit of watching its expansion and contraction. A thermometer was also placed in the water. Under the influence of the heat the composition was seen soon to expand, creeping up to its original position, so that by the time it had risen to 110 degrees it was once more in contact with the end of the lid. On the temperature being raised to 115 degrees the composition became quite soft. The heat was now turned off, and the process of cooling was commenced by adding cold water to the hot. During reduction of temperature the material began to exhibit a very slight contraction at 100 degrees. This contraction was perceptibly increased when a second addition of cold water reduced the temperature to 90 degrees. At 80 degrees the contraction was correspondingly increased, and at 70 degrees it had proceeded so far that there was a space between the composition and the end of the lid, into which three thicknesses of paper could be inserted. At 60 degrees the shrinkage admitted four thicknesses of paper, and at a point a little above freezing it admitted seven. Now, this gave about 1-35 of an inch as the contraction of six inches of modeling composition, in passing from 110 to about 35 degrees F. This would be nearly 1-105 of an inch in an impression measuring two inches; less than 0.25 millimeter.

Even if all of this contraction were reproduced in a plate, it would probably have only a beneficial effect on its adhesion to the membrane in soft mouths, but as the model is taken from the impression usually when the latter is at about 70 degrees F., the contraction above mentioned must be reduced by half, making it about 0.12 millimeter. When it is considered that the expansion of the least expansive kinds of plaster is not less than 0.35 millimeter in two inches, this feature of contraction is seen to be one of the main

virtues of modeling composition. (The writer uses a plaster treated to prevent expansion, and speaks of commonly existing conditions.) To test the expansibility of beeswax, "sticky wax" and paraffin wax, experiments similar to the above were made in pure beeswax, also in the paraffin wax put up by the Standard Oil Company, and in the composition sold as sticky wax. The beeswax was found to have about the same contraction as modeling composition, while sticky wax seemed to have a trifle more. The paraffin showed great contraction, about 1-16 of an inch in the length of six inches. This contraction of wax should be remembered in waxing up plates, bridges, etc., and in waxing together broken parts of plates, the operator holding the parts, if movable, in place till the wax is cool, to prevent their being drawn out of position by its contraction.

Experiment 2. To determine the effect on contraction of adhesion to tray. As modeling composition is somewhat disposed to loosen from the impression cup in places during withdrawal of impression, it has been my practice, and probably that of others, to stick tray and material together by holding bottom of tray over an alcohol flame, then chilling this heated region before placing the impression in the mouth.

Knowing that resistance to expansion will cause warping of plaster casts, it occurred to me that the resistance to contraction offered by this adhesion of the composition to the tray might cause a somewhat similar warping, or at least prevent contraction. The first test was made thus: Softened composition was pressed into the before-mentioned lid, filling it, and the two were then stuck together by the alcohol flame, and cooled in cold water. It was then seen that, despite the firm adhesion of the composition to the lid, the usual contraction had occurred in cooling, for though the material remained firmly adherent to the metal, it showed the space at the ends. Neither did it bulge nor warp, for after being forcibly torn from the lid, on being placed back there it sucked to the lid enough to lift it.

A second test was made thus: An impression cup was filled with softened composition, and into this was pressed an old plaster model, then withdrawn, thus producing a condition similar to an ordinary impression of the upper jaw. The alcohol flame was then applied to the tray to produce adhesion. The object now was to see whether the buccal surfaces of this impression would contract toward each

other, or whether they would remain so adherent to the tray as not to approach each other during the cooling of the composition. To accomplish this, two flat-headed tacks were stuck into the buccal surfaces of the impression, so that their heads faced each other across the palatal surface. A little stick of orange wood was then cut to the length of the space between the two tack heads, so that when placed end to end against them it was held by them in place with just sufficient pressure to prevent it falling away. Then, without wetting the stick, the impression was chilled, and it was found that so tightly was the stick held by the tacks, due to the contraction of the modeling composition in cooling, that the whole case could be lifted by it. These two experiments seem to show satisfactorily that adhesion to tray has no influence upon the warpage or contraction of modeling composition impressions.

Experiment 3. To determine whether the elasticity of modeling composition is enough to cause impressions to lose shape by retraction after withdrawal. A year or so ago there appeared in several of the magazines an item advising high heating of composition in taking impressions, in order to avoid a tendency of the material to retract as soon as the pressure on the impression is withdrawn by its removal from the mouth. This matter was tested thus: A roll or rope of the composition, about three-fourths of an inch thick and about a foot long, was made by heating two cakes of it to 120 degrees F. and rolling them together. A board was then taken, with cleats nailed down on its face at either end, leaving a space of thirteen inches between cleats. This rope of composition thus heated was stretched to reach from cleat to cleat, when, on being let go, it retracted a mere trifle—about four thicknesses of paper. It was next allowed to cool until its temperature was lower than is ever used in taking the impression, perhaps 95 degrees F., when it was doubled up and again rolled into a rope and once more laid between the cleats, stretching it to reach them as before, when, on being released, it immediately retracted about one-fourth inch. These two experiments demonstrated that there is greater elasticity in this material when warm than when hot, but not much in either case. A third test was thus made: It was again doubled (without reheating) and again rolled and stretched between the cleats, and a strip of wood was laid along it and held there by slight pressure for forty seconds. In this case no retraction occurred, neither during nor after removal of the pressure. This demonstrated that its elas-

ticity would be overcome by the pressure maintained by the operator in holding the impression in the mouth, even were it used much colder (and therefore more elastic) than it ordinarily is used. (The reader must not confound this retraction with contraction.)

Experiment 4: To determine if the quality of retraction in modeling composition is enough to cause impressions when dragged out of shape while being withdrawn from the mouth to resume their proper shape. It has always seemed to me that two or three minutes is hardly sufficient time to allow for the stiffening of modeling composition impressions in the mouth, and that when then taken out they are very apt to be dragged out of shape either by pressure against the cheeks or lips or by adhesion to the palate. By heating a lump of this material to 110 degrees F., and then removing it from the hot water and pressing the bulb of a thermometer into it, I found that it required (with the surrounding temperature at 70 degrees) no less than eight minutes for the heat of the lump to fall to 98 degrees. At this temperature it is quite stiff enough to be removed from the mouth without bending. But it is probably often withdrawn when no lower than 105 degrees, at which temperature, as the following tests show, this material has but little tendency to return to any form from which it has been dragged.

The rope of composition was again used, heated to 110 degrees F., rolled out and stretched on the cleated board, with a thermometer imbedded in its center, and allowed to fall to 105 degrees. At this temperature one end of the rope was bent upward, then let go, in order to test its power to resume its old position. This it quite failed to do, returning only about one-fourth the distance it had been bent. The other end was then taken and stretched, but on being released it shrank back only about one-fourth the distance it had been stretched. The rope was then allowed to fall to 100 degrees F., when these trials were repeated with more favorable, yet anything but perfect, results.

These two last experiments seem to teach that it is not necessary that modeling composition be very hot when placed in the mouth, but that it should be allowed to thoroughly cool before being withdrawn therefrom. As, however, it can perhaps never be known with certainty when dragging does not occur at the palate, it is safe practice to return it to position, after partial withdrawal, and hold it there for about half a minute.

But while it is not necessary that modeling composition should be

very hot when placed in the mouth, this is true only when sufficient compression can be made against the labial and buccal walls to overcome the tendency of the impression to fail to hug the upper portions of these walls, which tendency is greatest in the least heated material. If the reader will try this experiment by forcing a plaster model into composition held in an impression tray, he will observe that the material rises considerably higher than where it actually touches the model. By curving his middle finger and palm of hand around this portion, he can press it easily to place, but it does not tend of itself to assume correct position. Therefore, it is well to insert the material while quite hot and soft, when this tendency is least, and also when the ridge can be forced deeply into the tray and the support of the tray's flanges given to this critical portion of the impression.

Dr. W. H. Atkinson taught that there is an undesirable tendency in impressions, especially those taken in modeling composition, to force upward the membrane along the upper labial and buccal surfaces, where it passes from jaw to cheek, and so tighten that portion of it which ought to lie on the jaw as to give a defective impression—an impression of the stretched membrane instead of the jaw. To remedy this, he recommended the cutting away of all excess of the impression, slightly reheating and reinserting it. He had probably observed the tendency of composition to fail to hug the upper portions of the labial and buccal surfaces, attributing it, however, to other than the right cause, as I think. His remedy, however, appeals to one's judgment as good, though unnecessary perhaps if the simpler ones above mentioned are employed; still it is worthy of mention.

My paper, though direfully lengthy, has by no means exhausted the study of modeling composition. I have made no experiments to show whether this material compresses the soft parts more than does moderately stiff plaster, still less whether such compression is beneficial. Dr. Haskell, I think, believes it is not. Nor have I been able to experiment on the results of taking the model from the impression at various degrees of temperature, as affecting tightness of fit, which I hope to be able to do, for it would be very interesting to know how far contraction is beneficial, if at all. One thing may be said in this connection. Contraction of impressions proceeds from circumference to center, therefore a plate made from a contracted impression would (assuming that the model remains un-

changed) press hard against the buccal and labial surfaces, but be drawn away in the direction of the center from the walls on the other side of the ridge—the sides of the palatal arch. If this be so, it would seem that better results might be obtained by varnishing a non-expanded plaster impression with several coats of varnish, and thus obtaining a uniform reduction of size in the model.

The temptation, because of cost, to use the same lump of modeling composition in different mouths, and the difficulty of rendering it aseptic, is another phase of the subject which presents itself for the serious consideration of the profession.—*Items, May, 1902.*

ALOPECIA OF DENTAL ORIGIN. At the meeting of the Paris Society of Dermatology and Syphilography, M. Jacquet (*Lancet*, June 21, 1902) showed a patient who had been attacked by alopecia areata after having suffered from bilateral facial neuralgia. M. Jacquet had treated the alopecia without success, and eventually discovered that his patient had three carious molars. A dentist was called in, and extracted two teeth and filled a third. Three days later the neuralgia which had lasted for one year had quite disappeared. Twelve days later the patches of alopecia which had been perfectly bare were covered with hair.

M. Galippe, without wishing to criticize the theory proposed by M. Jacquet as to the dental origin of alopecia, reminded the meeting that so far no dentist appeared to have been struck by the coincidence of alopecia with dental lesions. For his own part, he had never seen a case.

M. Du Castel related the case of a lady who had consulted him about two patches of alopecia on the nape of her neck. A short time previous to their appearance she had had a tooth filled, and the dentist had omitted to place a clean napkin under her head. She considered that she had caught the infection from the head-rest. Now was this a case of contagion, or was the alopecia the consequence of dental operation?

M. Brocq related a case in support of M. Jacquet's contention. It was that of a little girl who had come under his care some months ago for alopecia. During the first three weeks of her treatment nothing was done to her mouth, and the patches of alopecia markedly increased. Now, however, her teeth are being carefully attended to, and while no new patches have developed, the original patches have lessened in size.

Letters.

DOCK MEASLEY LEARNS THE BOSS ANOTHER LESSON.

(AS TOLD BY THE OFFICE BOY.)

The Boss he's got so that he don't Haf Attend to his business, what with running after Dock Measley. Once in a Long While Dock Measley he'll kind o' look in at our Offis, to show he ain't Proud, an' to kind o' Encourage the Boss, I reckon. Sometimes he'll open the Boss's instrument case, an' look over his Tools an' tell him what kind he Orter Have, an' sniff. They's one thing about Dock Measley that the Boss says he can't noway Make Out: he's the only Young Dentist he ever knowed, that didn't make Three Hunderd Dolers, the first month he was in practice. Why it is that mos' every Young Dentist makes jis' that amount o' Money the first month, no more an' no less, the Boss says is one o' the Inscrutable Mysteries o' Providence that we hadn't orter presume to Pry into. He says our Finite Minds isn't capable o' Graspin' it. It's one o' the Stupendous, Overwhelmin' Paradoxes of Nature that utterly confounds human intelligence, like the Thirty an' Forty Thousan' Doler Incomes of the New York an' Chicago Dentists, that keeps a-pilin' up while they're off attendin' Dental Conventions.

The Boss he says he wouldn't want anythin' said about it, but he's kind o' Suspicioned of Late Years that some Dentists tells Sky-Scraper Stories about their incomes. His sayin' that reminded me about the time once when him an' Dock Peabody was talkin' about business, an' they'd both jis' took a Big Dose o' that Pokeberry Tonic that the Boss keeps in our Hall Closet, an' he said I mustn't never Taste it, fer it's Pizen without you're Growed Up. So then they got to talkin', an' says Dock Peabody, "Yes, I admit things isn't Rushin' with me, at least not Collections. I done tollable good in the Laboratory las' month, but I didn't Take In only Four Hunderd an' Twenty Dolers." The Boss he Winced, but d'rec'ly he Riz to the Occasion. Says he, "I don't call that so Offul Bad. I only Took In Four Hunderd an' Eighty-Seven Dolers myself" (like he thought Dock Peabody hadn't orter be Discouraged, comin' so near Ketchin' Up with him). Then Dock Peabody he looked Grumpy, an' in a minute he said he'd got to be a-goin', 'cause he'd

got four Big Bridges an' two partial Gold Sets to make that day. So when he'd Went the Boss he emptied the Bottle o' Pokeberry Juice, an' he Smiled sarcastic like, an' says he, "James, when you git to be a Dentist you mind One Thing, you keep your Best Assortment of Lies fer your Patients, not fer other Dentists. Mos' dentists ain't got a bit o' Tact about their Lyin'." Then two days later I ast him would he let me have Two Dolers on account, an' says he, "James, I'm Offul Sorry, but I'm bein' Punished dreadful fer that Lie I told Dock Peabody about takin' in so Mutch Money las' month. It seems like I ain't ever a-goin' to see another Doler agin'."

Jis' then the Bell Rung, an' that broke the Spell. I seen it was a New Patient, a Lady. I called the Boss, an' he come a-hurryin' in, givin' it away in Big Head-Lines that a new patient didn't Happen to us mutch oftener than a Eclipse of the Sun. The Lady she said she'd got a Big Lot o' Work to be done, an' she'd been waitin' till she had Plenty o' Leisure, so the Dentist could do the case Full Justice. So the Boss says he, "You certainly have come to the Right Offis, no mistake, an' I always try to be Reasonable in my Charges, an' I've got the reputation of bein' Gentle an' Painstakin'." Then he looked at her Teeth, an' says he, "They is, sure enough, a Lot to be done here. I hadn't orter be ast to set no price in advance, but bein' as it's you an' you ain't accustomed to Dentists' Charges, I'll do this Job fer Twenty-Three Dolers, an' it orter be Thirty Dolers, at a low estimate." The lady she looked kind o' Supprised, I thought, an' she didn't say nothin'. So then the Boss he considered a minute, an' says he, "I don't very often name a Price an' then come down from it, but I'll throw off Three Dolers, ef you reckon that would Suit you better." Still the Lady she never said a Word, only set there kind o' Studyin' the matter over, so then says the Boss, "Say we make it Eighteen Dolers fer the Whole Job, an' ef you can't pay all at once, you pay me Four Dolers the first settin', an' the balance when it's mos' Convenient." Then after another minute of waitin' says he, "Them terms is Offul Cheap, the way Dental Supplies costs jis' at Present." I was gittin' turrible out of Patience with the Boss, fer I reckoned he would come down to nothin' at all, an' throw in a bottle o' Tooth-Powder, without she'd say somethin'. But she never said nothin', only set there ponderin' it over, an' then says the Boss, "If you'd like to wait a week I'm a-lookin' to see the Price o' Dental Supplies go down, then mebbe I'll be able to do still better. You think it over, ef you ain't

Satisfied." So the Lady she said she'd consider the matter, and went away.

The nex' Mornin' the Boss sent me over to Dock Measley's offis to ast him would he let him come over an' see him Operate, 'cause Dock Measley'd said he'd be glad to Learn the Boss some Late Tricks about Fillin' Teeth. Dock Measley he's got a Offul Party young lady what's a Perfessional Stenographer in his Offis, an' she ain't reely his Offis Girl, but she's got a Desk in his Reception Room, an' she helps Tend Door, an' lets him kind o' Saas her, an' Order her Round when Patients is Present, instid o' Payin' him Rent.

Well, they was a Lady talkin' to this Young Lady when I went in, an' she ast, could she see the Dentist. The Young Lady said yes, when he wasn't so Offul Busy. Then she done a Curious Thing, she Snuck out an' she Brung In through the Back Hall a Young Girl what was settin' by the Kitchen Winder, an' she had her Set Down in Dock Measley's Chair. She Set There about twenty minutes, chawin' gum, an' Dock Measley eatin' Peanuts. Then Dock Measley he opened the door into the Reception Room, an' says he in a Loud Vois, so as Everybody could heer, "I'm so Drove, jis' at present, that I can't give you another Appointment fer Three Weeks." So the Young Lady says she, "I'm sorry, but I reckon I'll haf to Wait. Now I always Pay as I Go, Dock; how Mutch is it fer This Fillin'?" An' Dock Measley he says, Most Offul Composed, "Twelve Dolers, please." Says she, "Is that really enough, Doctor? You've been nearly an Hour filling the Tooth, an' you've hurt me so little that I feel like you'd order have something Extry for that." But Dock Measley he insisted Twelve Dolers was about right, so the Girl she rattled some Keys together, like it was coins, an' she said, "Thank you, Doctor, I shall take pleasure in recommending you to all my Friends. Good Morning."

Then jis' as she was a-goin' I seen Dock give her a Nickel on the Sly, an' wink, an' I reckon it was to Pay her fer the Trouble. So she went in the Reception Room an' put on a Hat an' some Gloves layin' on the Hat-Rack, an' went out the Front Door. (About three minutes later I seen her through a Back Winder a-peelin' Pertaters in the Kitchen.)

So then Dock Measley he went in the Reception Room, an' he looked Supprised when he seen the Lady, but he spoke offul soft an' Respectful, an' said somethin' about supposin' it was another Lady, like as if he'd got an Appointment with somebody else right

away. I looked at the Lady jis' then, an' it seemed to me she looked Mighty Like the one that had been in our Offis, the day before. The more I looked the more I was almost Sure it was the Same One. Every little bit, while he was a-talkin' to her, Dock Measley he'd excuse himself a Minute, an' he'd turn round toward the Young Lady poundin' on her Type-Writer, in a Corner, an' he'd Dictate a sentence or two, like she was his Amanuensis. It was some-thin' about how he was Deeply Sensible of the Honor the Association proposed to Confer on him, but all the same he was wishin' the Committee had turned their attention elsewhere, when it came to namin' a Suitable Candidate fer President of so August a Body as the American Dental Association. But ef the Committee felt that it was his Duty to accept, why he hadn't nothin' Further to Say, an' ef he was elected, he'd try to Serve to the best o' his Ability, an' at any sacrifice o' Time an' Expense in attendin' the Convention.

I was completely Took Aback when I heered that, for I was Peekin' over the Young Lady's shoulder an' I seen she wasn't payin' No Attention to his Polly-blatherin', but was copyin' a Paper about some Lawsuit. I was a mite Disappointed in Dock Measley, 'cause he'd always seemed above them kind o' Tricks, so when I got a Chance I spoke to him about it. Dock Measley says he, "James, everything is Fair when it comes to makin' a Favorable Impression on your Patients, 'cause they like dentists that appears Important, but it's in Bad Taste fer a dentist to toot about his importance to Other Dentists, an' a dentist that'll do that ought to have his head Chopped Off with a Monkey-Wrench."

So then Dock he give his attention to the Lady, an' I didn't heer all they said, only after he'd looked in her Mouth he said, "I reely do not care to venture any opinion as to what this work will cost you, madam. It will certainly not be less than Eighty Dolars, an' it might be a Hundred, or even more. To be frank with you, I expect to be liberally paid for my services, and I do not aim to attract to my office people who feel that they must count the Dolars. I cater to people of ample means, as a rule. Pardon me for this plain speaking. Let me say, however, if you feel that my rates are beyond your rheans, I can refer you to a worthy young Dentist who will do Good Work for you at much lower rates than I can afford."

After that it seemed like the lady wouldn't be Drove Away, an' says she, "I want only the Best Work by the Best Dentists, an' ex-

pense ain't only a Secondary Consideration." So then she made an Appointment. I got a Good Look at her, an' I seen sure it was the Lady that had been in our Offis the day before.

Dock he told me to have the Boss come prompt at Two O'clock that afternoon an' he said he'd got a Interestin' Case that would Learn him a Heap. The Boss he said it would be a good chance fer me to Learn somethin', too, an' I'd better go 'long. Dock Measley he'd already got the Dam on the lady's mouth, an' he showed the Boss how he annealed his Gold, an' tied ligatures, an' in short, how he done everything, an' you'd 'a' thought the Boss was a Freshman in College, the way Dock Measley treated him. I looked to see him git Bilin' Mad, but he didn't. The lady she acted Offul Strange; she kep' her handkerchief over her Eyes all the Time, like they was Weak. What with that an' the Dam over her Teeth, you couldn't tell what she looked like. The Boss he was so Interested that he went again the Nex' Day, an' he kep' on a-goin' till Dock Measley Finished the Job. He was nearly three days in all, doin' the work.

The Boss he noticed the Lady was Offul Bashful, an' she wouldn't never consent to him a-comin' in the Operatin' Room till the Rubber Dam was all Fixed and her Eyes covered up. As the Boss said to me afterwards, they was somethin' Mysterious about the whole Shootin'-Match. I never Left On, for I reckoned it wouldn't do to tell him what I Suspicioned. An' it wasn't explained until about a Month Later, when Dock Measley he come in our Offis an' he showed the Boss a check fer a Hunderd an' Forty Seven Dolers, as us three was a-goin' out together. "That's my Pay fer that Job you helped me on," said he. "What Job?" said the Boss. "Why that Mrs. Frazier, the one I was workin' for three days, an' you a-watchin' how I done things," says Dock Measley. "Oh, yes," says the Boss. "That was a Big Job, but you got good pay fer it."

"You bet I did. Some men would of done that Job fer Forty-Five Dolers," says Dock Measley, kind o' Sneerin'. "Lots o' Dentists ain't got the Least Idee what their Services is worth. I bet there's men in this very Town, would undertake to do sech a Job as that fer Eighteen Dolers." "I expect so," said the Boss. "Mighty nice woman, Mrs. Frazier is, but kind o' Funny about some things. Fer instance, she wouldn't hear to me lettin' you come in where I was at work for her, without she'd got her face all covered up. Eccentric, as you might say." "Oh, very," says the Boss. Dock Measley give a Sudden Start. "Say, there she goes this very min-

ute, Over across the street. The woman with the Blue parasol." The Boss he looked, kind o' careless, then all of a Sudden his jaw Dropped, he turned White, an' his Knees shook. "That—that wom—woman, that wo—woman, over there, did—did you sa—say!" he stammered. "Why—why that's the same—the same woman that came to see me about all that work. I offered to do it for—for Eighteen Dolers, myself. You'd heered that somehow, Dock Measley. You're jokin' Fun at me, Sir!" He was gittin' pretty Mad by this time. Says he, "An' you let me come an' Look On while you done *my* Job, an' you let me ast you a lot o' Fool Questions about how to Do things, like I wasn't only a Novice! Dern sech Friendship, Sir!"

The Boss he would of Hit Dock Measley with his Umbrella, right in the Open Street, I reckon, but as luck would have it, Dock Measley slipped on a Orange Peel jis' then, an' went down anyhow. He was pretty Badly Sprained, so the Boss he had to help him in a Drug-Store instead. But after he'd told the Druggist to look after him, he went out, never even sayin' good bye. After him an' me had walked four squares, neither one of us speakin' a Word, says he in a Sad Vois, "James, I give you Leave anytime you Kin, say fer a Month to come, to Sock me one behind the Ear, with anything handy. You watch out an' when I ain't a-lookin', give it to me. I reckon a Big Cabbage would be nearer to bein' Adequate to the requirements of this case. Mebbe I'll git mad an' Cuss, but don't let that Hender you, James. I hope I don't appear Conceity, James, but ef there's another as big a Fool in the Perfession as I am, I ain't never Heered of him. I claim to be in a Class by myself."

Cincinnati, O.

FRANK W. SAGE, D.D.S.

THEOLOGIAN'S JOKE ON THEOLOGY.—Around the table sat four college-bred men—a lawyer, a physician, an electrician and a theologian. There arose a dispute as to which of the sciences was the oldest. "Jurisprudence, of course," said the lawyer. "That was known already in Paradise, for Adam and Eve were evicted." "Oh, no," said the physician; "medicine is, without doubt, older. Just remember the operation performed on Adam for the possession of the rib. That was before they entered Paradise!" "You are both wrong, gentlemen," said the electrician; "the palm belongs to us electricians, as before anything else existed there issued forth the command: 'Let there be Light.'" "I do not wish to appear boastful," then spoke up the theologian, "but I believe the priority belongs to us, for before there was light there was darkness."

The Dental Digest.

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Editorial.

EXTREMES IN DENTAL PRACTICE.

Looking back over a period of thirty-five or forty years, there will be remembered many extremes in methods of practice which have generally been started by the leaders of advanced movements in dental practice. And whether correct and beneficial, or resulting in evil, almost always at the outset these new departures have been carried to too great extremes. Even such movements as have later proved beneficial and enduring have in all cases needed modifying at the start.

Among the first of these radical measures which impressed the writer in early practice was pulp capping. Then the capping of exposed pulps was advocated in extreme cases by the leading men of the dental profession. Even in cases where the pulp was exposed, and the patient had suffered considerable toothache, its treatment and capping were advocated, and even surgical procedure was advised, such as cutting a V and bringing the flaps together to lessen the size of the pulp and prevent its pressing against the ragged walls, and then to cap it. The question of pulp capping was one of heated discussion for years, but with the lapse of time moderation prevailed.

About the same time radical separating as a preventive of caries was practiced by the great majority of the profession. It was a common procedure to make wide separations between all the teeth, especially the molars and bicuspid, which were mutilated with V-shaped separations. This was persisted in for several years until the evil results became apparent to everyone, when the practice was entirely discontinued.

It was but natural, with the teeth of the community thus mutilated, that extreme contouring should follow close in the wake of this radical separating, and that cohesive gold should be used to a great extent. With this came the almost universal practice of condensing the gold by mallet force. Heavy gold also came into use,

running from No. 30 to No. 240, although No. 60 was generally used. For years thin gold, say Nos. 3 and 4, was not employed, so the usefulness of noncohesive gold was entirely ignored. These extremes in the use of cohesive gold have become somewhat modified, yet we incline to the belief that the value of noncohesive gold in proper places is not recognized as it should be. It is not our intention to discuss here the use of noncohesive gold, but we wish to describe one place in which its employment is always beneficial, namely, complicated approximal cavities between molars and bicusps. A sheet of No. 3 or No. 4 noncohesive foil should be made into a ribbon, which should be rolled on a broach into a cylinder, and the length of same when in position must be a little more than the depth of the cavity at the cervical margin. The last of roll may be made cohesive if desirable. With such cylinders the first one-third or one-half of these approximal cavities may be filled in one-tenth the time necessary when cohesive gold is used, and a much safer operation can be made. The balance of the filling can then be made with cohesive gold. We have repeatedly described this procedure for the filling of these difficult cavities, believing there is nothing that can take its place, but the method seems too sure and simple to be fascinating, hence but few adopt it.

The next great extreme in practice was crown and bridgework, and while this was terribly abused and brought into disrepute, the growth of both crown and bridgework during the last few years demonstrates the fact that they have come to stay.

There are more recent extremes in practice, but they have not been in vogue long enough to demonstrate just how far they will be carried or how much they will be modified. One of these is porcelain inlays. This line of work has been brought to great perfection, and certainly has a permanent place in practice, yet we think it is being carried to an extreme and will be modified as time proves its weak points.

Another radical measure that is being advocated, perhaps not so generally, but which is growing, is that of destroying the pulps of teeth for the prevention of loss of the sockets. In the last two or three years we have read in the journals and have heard in dental meetings educated men advocating the destruction of the pulp as one of the lines of treatment of this little understood and baffling disease of the oral cavity. That almost any suggestion for an improvement in the treatment of this difficulty should receive atten-

tion is not to be wondered at, but unless we are very much in error in regard to this many-named disease, destroying the pulps of the teeth affected will not become very general. The statement is made that teeth usually become at once firmer after the pulp has been removed, and that if the pulp were destroyed early in life it would prevent much of the loss of the sockets of the teeth, and the periodontal membrane would be strengthened. Baffled as we are in the treatment of this difficulty, we are at any time ready to listen to arguments in favor of such procedure as promises more certainty of permanent results. But we certainly ought to have more proof than has been presented up to this time before adopting such a radical measure.

Without having gone into a thorough investigation of the subject it would be folly to assert the truth or fallacy of the theories advanced, but a careful examination of the teeth, pulpless or otherwise, in numerous mouths where the disease in any of its various forms is prevalent, will give some data by which to get at the truth. If in such examination the pulpless teeth generally show a tendency to be less affected than those with live pulps in the same mouth under similar influences, then with such facts established we are better prepared to affirm or reject the claims made by the advocates of this line of procedure. We shall, however, be surprised if exactly the opposite is not found to be true, namely, that the pulpless teeth are much more affected and sooner lost than those with live pulps.

We will consider only one other extreme at this time, viz., extension for prevention. This is receiving a fair share of attention from active disputants. Not more, however, than the importance of the subject deserves, in fact, the theories advanced, and the line of procedure advocated under the head of extension for prevention as a remedy for the failures of fillings, involve so many complicated questions that a careful study of the whole question of dental caries must be made in order to decide on proper lines of procedure. Therefore, no more important subject has been brought to the attention of the profession in our day. Yet when reading or listening to the discussions which have taken place recently we have been impressed with the feeling that either there was a lack of careful study by the speaker of the conditions under which caries takes place in the mouth, or else he wanted to criticize someone. At least there seems to be a lack of desire to get at the facts. As a sample of the way this subject is treated in discussions by those who are

opposing it, we would call attention to some points of an editorial which appeared in the *Items of Interest* for September. The editor, after some kind words of commendation of an article by Dr. Black, which is published on page 773 of this issue, makes what we consider unfair and illogical criticisms. In speaking of the tendency of decay to spread superficially on areas of susceptibility, and the tendency to recur about the margins of fillings, he says, "But Dr. Black does not tell us why this recurrence is at the margins of the fillings. Why not elsewhere in that region which is prone to decay, and why not as a distinct new cavity, independent of the filled area." Now this has been a perfectly simple proposition. If decay begins at the center of a given area, and its tendency is to spread superficially toward the margins of that area, certainly if the central portion is cut away and a good filling is made the greatest tendency to recurrence of decay is exactly next to the margins of that filling, because that portion close against the margins is the portion that would be next attacked in the process of spreading. The mental process in following this proposition is quite akin to that by which one realizes that two and two make four. Dr. Ottolengui's "why not as a distinct new cavity, independent of the filled area," is a different proposition. If it is independent of the filled area it has nothing to do with the case in hand, we do not place fillings in occlusal surfaces to prevent decay of lingual surfaces, nor in mesial surfaces to prevent decay of buccal surfaces. The editor seems to have ignored Dr. Black's first propositions in the article quoted, in which he defines on page 774 "recurrence from leakage," "and a new decay that has started in the enamel beside the filling." Both are distinctly in the area of liability in which the filling is placed, not in an independent area. Such decays have been known and described as *recurrence* of decay from time immemorial.

Next Dr. Ottolengui tells us that decay upon the labial surfaces of the incisors is usually upon the highest part of the curve of the tooth, "the place of all others in the mouth reached most often and most thoroughly cleansed by the tooth brush." Instead of this last clause, which we have quoted, he would have explained, had he examined these cases more carefully, that while it is upon the highest part of the curve of the tooth, mesio-distally, in the other direction, or incisio-gingivally, the decay begins close to the free margin of the gum, the place of all others that people oftenest fail to cleanse properly with the tooth brush unless they have been especially trained to

its use in that locality. He should have seen also that in these cases there is generally a fullness of the gum tissue, if not an actual swelling of the immediate gum margin, which with its curve from mesial to distal forms a kind of pocket which prevents this particular area from being cleansed by the ordinary motions of food, lips, etc., in chewing. In this condition a person will ordinarily touch these points very lightly with the brush or avoid them altogether. Besides this, in a great many mouths the rigidity of the muscles in this region often makes it quite difficult for the patient to reach these danger points. They are, however, surfaces that can be kept clean with the brush when he has been trained to the proper use of that instrument, but when this tendency has been developed the attainment of success allows of no neglect.

The editor of the *Items* is again illogical in discussing the question of small proximate fillings versus large, and says regarding the coming of immunity, or changes for the better with age, "and even in young mouths the extension is made because the conditions may not change for the better." It would be more sensible to say that in young mouths it will be longer before we can expect changes for the better. Further on Dr. Ottolengui says, "There must be a reasonable number of patients in whose mouths the conditions do remain the same; indeed, there should be a majority of such instances to establish the practice." Here we need only to ask who is willing that a majority of his fillings shall be known to be falling to pieces before he will seek to amend his plans. Then passing on Dr. Ottolengui speaks of the success some men have had with small approximal fillings, and winds up with this astonishing remark, "At least they should have met an *appreciable* number of failures, if recurrence around small fillings is to be seriously apprehended." (Italics ours.) Certainly we have little to say to those who fill teeth and do not meet with an *appreciable* number of failures, no matter what their plan of operating. We feel like quoting Paul when he says, "He who (fillesh teeth) and sayeth he (faileth) not is a ———," but we refrain.

The practice of extension for prevention by the inexperienced and incompetent, both as regards observation and manipulative skill, is apt to be harmful many times to the patient. To carry out this practice, and to know when and where it is going to be advantageous in preventing recurrence and failures, requires the best of judgment and experienced observation as to the different appearances of

mouths which indicate whether or not decay is likely to recur if the cavity is not extended beyond the danger point. But with such skill and knowledge as can be acquired only by personal observation the cases where this extension is indicated can be decided upon with a reasonable degree of certainty. While our plan of operation has been what might be called radical extension, we have nevertheless had many failures and recurrences of decay beyond the fillings, where if the extension had been a little farther, as described accurately by Dr. Black, the failure of what was otherwise a perfect operation could have been avoided.

Notices.

NEW JERSEY STATE EXAMINING BOARD.

The New Jersey State Board of Dental Examiners will hold its fall meeting for examinations Oct. 21-23, 1902. Further information may be had of the secretary, J. Allen Osmun, 588 Broad St., Newark.

SOUTHERN ILLINOIS DENTAL SOCIETY.

After some years rest this society will hold its next annual session at Alton, Oct. 14-15, 1902. All are cordially invited to be present. There is promise of an excellent program and a good time.

C. B. ROHLAND, Secretary, Alton.

MINNESOTA STATE DENTAL ASSOCIATION.

The Minnesota State Dental Association closed its annual meeting at St. Paul, Sept. 4, 1902, and elected the following officers: President, S. R. Holden; vice-president, A. M. Lewis; secretary, George S. Todd; treasurer, H. M. Reid; chairman executive committee, J. M. Walls; master of clinics, J. O. Wells.

LATEST DENTAL PATENTS.

- 707,810. Form for holding teeth, R. J. Wenker, Milwaukee, Wis.
- 707,912. Fountain spittoon, C. M. Freeman, Baltimore, Md.
- 708,772. Gold annealer, C. F. Lauderdale, Milwaukee, Wis.
- 708,811. Machine for casting bridges, M. W. Hollingsworth, Philadelphia, Pa.
- 709,410. Dental bridge-work, J. L. Kelly, St. Paul, Minn.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Illinois State Board of Dental Examiners, for the examination of applicants to practice dentistry in the state of Illinois, will be held in Chicago, Oct. 17-18, 1902.

A recent opinion of the attorney-general specifies the following as being eligible to take the examination before the Board: "Anyone holding a

medical diploma from a reputable medical college; anyone who has been a legal practitioner of dentistry for ten years prior to removing into the state."

All applicants must come prepared with instruments, rubber dam, and gold to perform practical work.

The examination fee is ten dollars. Any further information can be obtained by addressing the secretary.

J. G. REID, D. D. S., Sec'y, 1006 Champlain Building, Chicago.

NORTHERN ILLINOIS DENTAL SOCIETY.

The fifteenth annual meeting of the Northern Illinois Dental Society will be held at Rockford, Oct. 15-16, 1902. A splendid program has been prepared, and members of the profession are cordially invited to be present. Rockford is an excellent meeting place, and a good and profitable time is assured. The dues are only one dollar per year, and over thirty new members were taken in at the last meeting.

J. J. REED, Secretary.

NORTHEASTERN DENTAL ASSOCIATION.

The eighth annual meeting of the Northeastern Dental Association will convene at Worcester, Mass., Oct. 15-17, 1902. This meeting promises to be better than its predecessors in essays, clinics and exhibits. A cordial invitation is extended to New England dentists, members of their respective state dental societies, to attend and join the association. A rate of one and one-third fare on the certificate plan has been given by all railroads.

EDGAR O. KINSMAN, Secretary, Cambridge, Mass.

MASSACHUSETTS EXAMINING BOARD.

A meeting of the Massachusetts Board of Registration in Dentistry, for the examination of candidates, will be held in Boston, Mass., Oct. 22, 23 and 24, 1902.

Candidates who have applied for examination will report to the secretary, Wednesday, October 22, at 9:30 a. m., at Tufts College Dental Infirmary, corner Huntington and Rogers avenues, and come prepared with rubber-dam, gold and instruments, to demonstrate their skill in operative dentistry. Anyone who wishes may bring his patient. So far as possible patients will be furnished. The Board in every instance selects the cavity to be filled. Partially prepared cavities never accepted.

The theoretic examination—written—will include operative dentistry, prosthetic dentistry, crown and bridge work, orthodontia, anatomy, histology, surgery, pathology, materia medica, therapeutics, physiology, bacteriology, anesthesia, chemistry and metallurgy, and will be held at Civil Service Rooms, State House, from Thursday, October 23, at 9:30 a. m., until Friday p. m., October 24.

All applications, together with the fee of twenty dollars, must be filed with the secretary of the Board on or before October 15, as no application for this meeting will be received after that date.

Every candidate for examination must be twenty-one years of age.

Application blanks may be obtained from the secretary.

Candidates who have taken an examination, and failed, and desire to come before the Board again at this meeting are not required to fill out a second application blank, but must notify the secretary as above in order to be examined. The fee for third and subsequent examinations is \$5.

G. E. MITCHELL, D. D. S., Secretary, Haverhill, Mass.

GETTING A FIT.



Bachelor Uncle (a dentist)—“By Jove! it's a lucky thing I caught sight of the new baby before I presented the silver mug—I'll just cut back to the shop, and—



Get him one the right size.”

News Summary.

E. N. CLARK, 85 years old, a dentist at Beloit, Wis., died Sept. 8, 1902.

J. A. HARRIS, 69 years old, a dentist at Pontiac, Mich., died Aug. 16, 1902.

THE PROCRASTINATION of the baby's teeth is the thief of the father's slumbers.

O. A. HOLT, a young dentist at Tower Hill, Ill., committed suicide Sept. 10, 1902.

WILLIAM ROSE, a young dentist at Leadville, Colo., died Sept. 2, 1902, from pneumonia.

NITRIC ACID FOR THE VOICE.—Dr. Bartholow (*Northwestern Lancet*) says that failure of the voice from fatigue or simple mucous laryngitis is often

wonderfully relieved by a small dose of nitric acid every two hours, well diluted.

E. W. WHITE, a young dentist of Park City, Utah, died September 12 from typhoid fever.

W. W. LORING, 59 years of age, a dentist at Indianola, Ia., died suddenly Aug. 27, 1902.

H. J. BUCHER, 35 years old, a dentist at Milwaukee, committed suicide Sept. 7, 1902.

J. C. BUCHANAN, 79 years old, a dentist at Grand Rapids, Mich., died Sept. 4, 1902.

C. B. CAMPBELL, 25 years old, a dentist of Chicago, died of consumption Aug. 25, 1902.

OLIVER JOHNSON, a young dentist at Lincoln, Neb., died August 21 from typhoid fever.

DEWITT C. BENBOW, 72 years old, a retired dentist at Greensboro, N. C., died Sept. 2, 1902.

D. F. COTTERMAN, 42 years of age, a dentist of Streator, Ill., died Sept. 6, 1902, from diabetes.

A. T. COLE, 23 years of age, a dentist at Marion, Ind., died from tuberculosis Aug. 18, 1902.

A. F. COX, 68 years of age, a retired dentist at Alexandria, Va., died from cancer Sept. 16, 1902.

DENTER.—A patient remarks that a dentist is so called because he puts a dent in one's pocketbook.

APPROPRIATE.—We recently received a letter from a dentist named Pullar residing in New York State.

S. M. GANT, a dentist, formerly in practice at Indianapolis, but latterly in Chicago, died Sept. 5, 1902.

W. C. CARNEY, 32 years old, a dentist at Moundsville, Tenn., died suddenly from appendicitis Sept. 4, 1902.

C. WARNER, 26 years of age, a dentist at Alturas, Cal., was killed Sept. 4, 1902, by falling down a mine shaft.

G. W. NORTH, a dentist formerly at Goshen, Ind., but later of Alexandria, became violently insane Aug. 24, 1902.

LOCATIONS.—According to newspaper report, Higbee, Mo., Seneca, Mo., and Edmore, N. Dak., are without a dentist.

DAVID GIBBONS, one of the oldest dentists in Warren, O., was struck by a train August 20, and probably fatally injured.

E. E. HUNTER, 32 years of age, a dentist at San Antonio, Tex., died Sept. 3, 1902, after a long illness brought on by the grip.

WATER COMBUSTIBLE.—Dr. Lietz of Hamburg claims to have discovered a method of rendering water as combustible as oil, producing a pure white light and intense heat. It has always been a mystery that water, composed

of hydrogen, the most inflammable of gases, and of oxygen, the principal supporter of combustion, should itself be non-inflammable.—*Alk. Clinic.*

C. STODDARD SMITH, 68 years of age, died at Argyle, Minn., Aug. 30, 1902. He was formerly a well-known dentist of Chicago.

DISILLUSIONIZED.—“The saying is, ‘No man is a hero to his valet,’ but the dentist thinks it ought to be, ‘No man is a hero to his dentist.’”

LORENZO BUSH, 84 years old, a dentist at La Grange, Ill., died Sept. 10, 1902. He is said to have named the town of Hinsdale, one of the suburbs of Chicago.

ACCIDENT.—A dentist at Athens, Ga., was badly burned September 13 with sulphuric acid, which was accidentally spilled on him while at work in his laboratory.

THREE KINDS.—A correspondent of the Academy (London) considers that memoirs are of three kinds—biographies, autobiographies and ought-not-to-be-ographies.

W. D. CRANE, 60 years old, a well-known dentist of Newark, N. J., was thrown from a trolley car September 3, and removed to the hospital in a dying condition.

BANKRUPT.—Ira D. Steele, Chicago.—A. N. Hagan, South Omaha, Neb., liabilities, \$24,887; assets, \$8,195. G. W. Shackelford, Savannah, Ga., liabilities, \$1,916; assets, unknown.

HOMEOPATHY PREFERRED.—First little girl: “The doctor brought us twins yesterday.” Second little girl: “That’s where you made a mistake. You should have had a homeopath.”

EPITHELIOMA OF LIP.—A recurrent growth disappeared entirely under galvano-faradism, and a lotion of guaiacol and thiosinamin each one part, glycerin and water eight parts each.—*Armstrong.*

DIVORCES.—Mrs. B. W. Dutton has brought suit for divorce against her husband, a dentist of Chicago.—W. F. Benner, a dentist at Columbus, O., and his wife have each brought suit for divorce.

BAD BREATH.—To remove offensive odors, such as are due to whisky and tobacco, E. J. Kempf (*Indiana Med. Jour.*) asserts there is nothing more effectual than 1 part of dioxogen in 5 parts of rosewater.

BAD DEBTS BOUGHT.—A company has been incorporated in Kentucky for the purpose of purchasing deadbeat accounts from dentists and physicians, with the expectation, of course, of collecting same. We wish it luck.

FURTHER DATA WANTED.—Archbishop Ryan was recently accosted by a young man on the street who said, “Your face is familiar. Where in hell have I seen you?” “I really don’t know. What part of hell do you come from?” replied the prelate.

ILLEGAL PRACTITIONERS.—A woman at Danbury, Conn., was arrested on August 16, and fined \$25 and costs for illegal practice of dentistry. She paid up and left the state.—A man at Waterbury, Conn., was arrested on September 6 for violating the dental law.—A young man at Indianapolis,

Ind., was arrested August 27 for practicing dentistry without a license. He was a student in a dental college and had opened the office during his vacation.

EXAMINING BOARD AFFAIRS.—C. B. Bratt of Allegheny and G. W. Klump of Williamsport on September 5 were appointed members of the Pennsylvania State Board of Dental Examiners. Dr. Bratt succeeds Dr. J. A. Libbey.

X-RAY LOCATES TEETH.—A man in Norfolk, Conn., recently swallowed his set of false teeth, and the physicians were unable to locate them, but they were finally discovered with the X-ray near the lungs. An operation is probable.

GERMAN PHYSICIANS RECOMMEND CREMATION.—Several thousand German physicians have signed a petition to the Reichstag, asking that the burning of bodies of persons dying of contagious diseases should be made obligatory.—*Medical Age.*

FEVER BLISTER.—When a pretty girl comes in and wants you to stop an approaching fever blister on her lip "quick before the party," paint it with a solution of flexible collodion and salicylic acid, grs. 12 to the ounce.—*O. L. Peak in Alk. Clinic.*

FIRES.—M. A. Banks, Rockford, Ill., September 8, small fire caused by an electric wire.—E. C. Crawford, Chicago, August 28, loss \$500.—Z. B. Houghton, Paulding, O., September 4, loss \$300.—A. D. Raffington, Bison, Kan., September 3, loss \$200.

RATHER TARDY.—A woman in Chicago recently sued a dentist to recover \$20 which she paid him four years before for a set of false teeth, and which she had just discovered did not fit. The judge dismissed the case and assessed her with the costs.

PROFANITY.—"Who is that scientific gent in Room 15?" asked the scrub-lady. "I dunno," answered the broomgentleman. "But he's a funny one to swear. You ought to hear him. When he saw a lot of mold on top of his ink he said 'b'cillus!' just that way."

ONE AT A TIME.—Mrs. Emdee—"You said to-day that you had cured that man you were doctoring for asthma. Here the evening paper says he died of consumption." Dr. Emdee—"Yes, er—er—my dear, I wasn't doctoring him for consumption; just asthma."—*Judge.*

CALIFORNIA DENTAL LAW ATTACKED.—Two dentists in San Francisco were recently fined \$50 each for violating the dental law of the State. They appealed from the decision to the Superior Court, which, however, has affirmed it, and the matter will now be taken to the Supreme Court of the State, as the purpose is to test the constitutionality of the dental act of 1885.

OIL OF TURPENTINE IN NOSE-BLEED.—Isatchick (*Vojenno Meditsinsky Journal*) saw a case of uncontrollable nose-bleed in a malarial patient, the hemorrhage occurring on an afebrile morning. Tamponing, ergot internally, etc., were of no avail, until, in the evening, tampons soaked in turpentine were introduced, whereupon the bleeding stopped. Two days later the bleeding recommenced, and tampons of turpentine and cotton were again introduced,

with the effect of arresting the hemorrhage. A third attack of nose-bleed was arrested in the same manner after a few days. Billroth recommended oil of turpentine in hemostasis.

HEART LONG-LIVED.—Though she was dead for eight and one-half hours, the heart of a patient in a Chicago hospital remained active and pulsated with regularity, although the woman was proven dead by all other tests. The case was pronounced one of Landry's paralysis.

DAMAGE SUITS.—A woman in Detroit is suing a dentist for extracting the wrong tooth.—A man in Grand Rapids is suing a dental parlor for \$2,000 damages, claiming that during the extraction of a tooth his jaw was fractured, and that blood-poisoning later set in.

RECEDING GUMS.—The application of glycerite of tannin to spongy and receding gums will be found effective. Whether this condition be due to ptialism or debility following acute disease, the topical use of this simple remedy will be satisfactory.—*Med. Standard.*

TO BEND A CROWN-POST WITHOUT STRAIN ON THE CROWN.—Grasp the post with a pair of crown-contouring pliers. The convex jaw of the pliers forces a portion of the post into the concave jaw, and thus bends it without danger to the porcelain crown.—*Pacific Med. Jour.*

SOUTHWESTERN MICHIGAN DENTAL ASSOCIATION met at Three Rivers, Sept. 9-10, 1902, and elected the following officers: President, C. H. Worboys; vice-president, A. L. Le Gro; secretary-treasurer, C. W. Johnson. The next meeting will be held in April, 1903, at Albion.

SOUTHWEST VIRGINIA DENTAL SOCIETY was organized Sept. 5, 1902, at Roanoke, Va., and the following officers were elected: President, C. H. Carson; vice-president, J. H. Hartman; secretary-treasurer, R. L. Simpson; executive committee, W. P. Nye, J. H. Campbell, W. S. Gregory.

NORTHERN IOWA DENTAL SOCIETY held its eighth annual meeting Sept. 2-4, 1902, and elected the following officers: President, Wm. Finn; vice-president, A. W. Beach; secretary, C. L. Topliff; treasurer, H. W. Riser. The next meeting will be held at Clear Lake the first week in September, 1903.

MORE THAN HE COULD STAND.—"After you have taken this medicine," said the physician, "give yourself a hot-water bath and go to bed at once." "Gosh, doc!" exclaimed the shaggy-haired patient. "Can't you make it a mustard plaster or somethin' like that? I always kitch cold when I take a bath!"

INSURANCE FOR TEETH.—The latest freak insurance has developed in England, the home of novel forms of insurance. This scheme is tooth insurance, and the company agrees for a premium of \$15 per year to keep the teeth in order. It is reported that the company expects to do business in the United States on the same basis.

NATIONAL DEATH-RATE.—The fifteen principal causes of death, with the rate per 100,000, as made public by the Census Bureau, are as follows: Pneumonia, 191.9; consumption, 191.5; heart disease, 134; kidney disease, 88.7; diarrheal diseases, 85.1; apoplexy, 66.6; cancer, 60; old age, 54; bronchitis, 48.3; cholera infantum, 47.8; debility, 45.5; inflammation of the brain and

meningitis, 41.8; diphtheria, 34.4; typhoid, 33.8, and premature birth, 33.7. Death from all the principal diseases shows a decrease since 1890, the most notable being in consumption, which decreased 54.9 per 100,000.—*Dietetic and Hygienic Gazette*.

POWER OF THE EYE.—A man recently went to a dentist to have a tooth extracted, and gas was administered. The man seemed to be under its influence, but he kept one eye open. More gas was given, but to no effect. "Shut that eye," said the doctor finally, losing patience. "Can't," said the man in a drowsy voice, "it's glass."

GERMANY FROWNS ON ADVERTISING.—A Berlin dentist recently advertised that the work he did was absolutely painless and free from danger. On complaint of the local dental association he was summoned to court and warned that any repetition of the advertisement would mean a fine. He was also assessed the cost of proceedings.

NOISY.—Here is a sample of a good college yell:

"Well man, sick man, dead man—stiff.
Dig 'em up, cut 'em up—what's the diff.
Humerus, tumorous, blood and gore!
Syracuse medicos, 1904!"

ENCOURAGING.—"I haven't had a single call since I opened my office ten days ago," complained the newly fledged M. D. "Here I sit day after day like Patience on a monument." "Oh, well, don't get discouraged," rejoined the sympathetic friend. "It's only a matter of time until you have patients under monuments."—*Chicago Daily News*.

ANESTHESIA AND ALCOHOLICS.—In operation upon alcoholic subjects it is often wise to give them a drink of spirits an hour or less before its performance. These people are more restless than others and often require a greater quantity of the anesthetic to abolish sensibility, but long deprivation of drink, if anything, only tends to intensify those unfavorable tendencies.—*Inter. Jour. of Surg.*

EPISTAXIS.—A young lady, 17 years old, five feet high, weight 125 pounds, blonde, had been bleeding at the nose profusely for half an hour, saturating several large towels and quite a quantity caught in the bowl. I at once injected atropin sulphate gr. 1-100 hypodermically, and introduced into the nostrils a pledget of cotton with ten drops of oil of erigeron on it. In five minutes all hemorrhage had ceased and did not recur. This oil is a wonderful styptic. I have used it for many years, especially in post-partum hemorrhages.—*J. W. Martin in Alk. Clinic*.

VARIATION OF THE QUANTITY OF THIOCYANATE CONTAINED IN HUMAN SALIVA, AND ITS CAUSES IN HEALTH AND DISEASE.—Jul. A. Grober (*Chem. Centr.*, 1901; *J. Chem. Soc.*, 80.) Potassium thiocyanate is found in the human body only in the saliva. (This statement is not true, as it exists in both the blood and the urine.—*J. A. M.*) It is not formed by the decomposition of the saliva, but is actually secreted, and the quantity diminishes with the duration of the secretion. The quantity present in the saliva is not affected by change of diet in the case of healthy persons or by the use of tobacco by

non-smokers. The secretion of the thiocyanate is probably dependent on the condition of the organism in respect to the albumen decomposed and utilized, and where this is small in amount, as in severe cachectic cases, little or no thiocyanate is secreted.

MARRIED.—A. H. Frith, Bermuda.—Susie A. Kingsbury, New Hartford, N. Y., Sept. 3, 1902. H. G. Johnson, Rockford, Ill.—Cora Ransom, Chicago, Oct. 4, 1902. R. C. McCowan, Zanesville, O.—Elsie Waller, Zanesville, O., Sept. 9, 1902. J. J. Reed, Beloit, Wis.—Alice J. Kimball, Rockford, Ill., Sept. 10, 1902. H. D. Whitmarsh, Binghamton, N. Y.—Mabel Fuller, Tully, N. Y., Aug. 20, 1902.

SAME OLD GAME.—Reports from the West indicate that the people out there are just as easy as they are elsewhere. The fakir's game is to extract teeth without cost, providing an order is given for a new set. A few days later he tries in an old plate, which he always carries in stock, collects half the price for the set, and takes it away with him to be altered. That is the last the victim sees of teeth, money or fakir. The public certainly does need "dental education."

DISTINGUISHING DEATH FROM CATALEPSY.—A means of distinguishing death from catalepsy has been devised by Dr. Icard of Marseilles and submitted to the Academy of Sciences. He injects fluorescin, a strong coloring matter that is not poisonous, into the veins. A gram of the fluorescin solution will color 45,000 liters of water. If there is any circulation the body will turn grass green in two minutes, but the color passes away in a couple of hours without doing any harm.

SINGULAR COINCIDENCE.—In looking over the last issue of the DENTAL REVIEW we notice the president's address, delivered before the Indiana State Dental Association, in June of this year, by Dr. C. E. Pittman. The address is two pages long, and one page of it is identical in wording with the president's address delivered before the Illinois State Dental Society, by Dr. J. G. Reid, in May, 1901, and printed in the *DIGEST* for July, 1901. Great minds move in the same channel.

ELECTRIC LIGHT ON THE EYES.—A Russian specialist has decided that, contrary to the general opinion, electric light plays less havoc with the eyes than other forms of artificial light. He bases his deductions on the fact that disease and damage to the eye are proportioned to the frequency of the closure of the lids. He finds that the lids close in a minute 6.8 times with candlelight, 2.8 times with gaslight, 2.2 times with sunlight, and 1.8 times with electric light.—*Med. Record*.

SNORING.—Snoring, says W. Frendersthal (*Med. Record*), is due to the fact that in so-called mouth-breathers the free edge of the soft palate hangs loose in the pharynx and vibrates with every inspiration and expiration. This may be due to some obstruction to the upper air passages by adenoids or tumors, or to relaxation of the soft palate, so that it falls backward when the patient lies down, especially upon the back, thus closing up the passages between the throat and nose. In this latter class of cases the author has had some encouraging results by applying the galvanic or faradic current di-

rectly to the velum palati. He warns against using mechanical devices to keep the mouth closed during sleep. If a person snores there is a pathological reason for this which should be ascertained.

WHAT THE BRAIN WILL STAND.—A French investigator has come to the conclusion that the brains of naval and military men give out most quickly. He states that, out of every 100,000 men of the army or naval profession, 199 are hopelessly lunatics. Of the so-called liberal professions, artists are the first to succumb to the brain-strain, next the lawyers, followed at some distance by doctors, clergy, literary men, and civil servants. Striking an average of this group, 177 go mad to each 100,000.

A WONDERFUL CIGARET.—The following notice appears upon the wrapper of a cigaret manufactured in Cuba: "The proprietors of this FACTORY guarantee that the CIGARETTES which they manufacture are hygienical and have obtained great credit for the curative influence which they exercise; for by their use *constipation of the lungs* and the bronchial apparatus is avoided; contagious atmospheres disinfected; bad breath sweetened; the teeth preserved and scorfula prevented."

RUSSIAN SURGEONS.—When he is first engaged a Russian surgeon starts upon the salary of \$400 a year. On this pay he remains four years, when he is advanced to \$500 yearly for four years. Four years later this is increased to \$650; then to \$750, the final remuneration, the highest which he can obtain, being \$2,750 a year. When compared with the salaries of American army surgeons, it will be noted that Russia pays less than half the amount received by United States military surgeons.

CARBOLIC ACID AS APPETIZER.—It is reported, says the *Phila. Med. Jour.*, that an Austrian physician, by applying carbolic acid gas at a temperature between 100° and 120° F. below freezing, has found a means for giving sick people an appetite. The cold carbolic acid, wrapped in a bag of brown holland, is placed upon the epigastrium a half hour before meals. A layer of cotton-wool is inserted between the bag and the stomach. It is said that after five days' treatment a good appetite returns.

EXASPERATING.—Oh, dear! How perfectly exasperating these things are, to be sure. Here's a faith-curist at Urbana, O., who attempted to resolve four attacks of small-pox into nothingness, by the power of her mind and alleged spiritual partnership. But in this case "the horse blew first;" and instead of curing her patients she contracted the malady herself, and had to send for a real doctor, a crude and crass materialist, who prescribed real material drugs, which she took obediently and got well.—*Alkaloidal Clinic.*

HARE-LIP.—Ratchford reports a rather strange history of a family in which there were born four girls with hare-lips and cleft palates and three boys without any trace of this peculiarity. A curious fact was that the mother during pregnancy was able to foretell the sex of the children and whether or not they would be thus deformed, at least that was her belief, and it seems to have been borne out by the facts. Whether her mental condition of depression under this conviction had anything to do with it, of course, is worthy of thought. There was a bad family history of tuber-

culosis on both sides, but no history of hare-lip. The mother had a high arched palate.—*Archives of Pediatrics.*

SUBLATA CAUSA TOLLITUR EFFECTUS.—The *New York Times* is responsible for the following: At one of Dr. Mitchell's surgical clinics a woman was presented who had a dislocation of one side of the lower jaw. The history showed that the injury had been sustained while she was strapping a very tightly packed dress-suit case. After reciting this history, Dr. Mitchell asked a student: "What method of procedure would you advise to bring about a reduction of the dislocation?" The answer came promptly: "I would advise her to unstrap the suit case, sir."

GROWING TOGETHER OF THE JAWS.—Castro reports the case of a man 23 years of age whose jaws had grown inextricably together as the result of noma after measles in childhood. He was able to eat only liquid food, and this through a small opening where two cuspid teeth were missing. General and even local anesthesia were impossible under these conditions, and the cheeks were first detached from the jaws. When this wound had healed the interlaced teeth were pulled and the jaws pried apart, until comparative function was restored on the left side.—*El Siglo Med. Jour. A. M. A.*

CONGENITAL PERITHELIAL TUMOR.—H. Füh (*Beitrage z. Geb. u. Gyno.*) claims that the tumor he describes is the only known example of its kind. It was in the gum of a girl baby two days old, and although it did not start in the enamel germ it had involved the latter in its growth. It was as large as a hen's egg and protruded from the mouth at birth. After its removal the teeth developed normally except the two upper incisors, which are rudimentary and gray in color. The child is now a healthy two-year-old. Six cases are on record of perithelial tumors of the ovary, of which three were malignant.—*Jour. A. M. A.*

FRONTAL SINUSITIS WITH MEASLES.—A case of this rare complication of measles was recently reported by Dr. Joseph Belin in a man of 18, with recovery following incision. Suppuration of the frontal sinus lasted about ten days, ceasing after the evacuation of the abscess through an incision in the eyebrow. A few such cases have been reported in influenza and scarlet fever. He reported another case, in a man of 24, in whom frontal and ethmoidal suppuration, with influenza, was followed by brain abscess. The autopsy revealed an abscess of the frontal lobe, which was probably secondary to the frontal and ethmoidal sinusitis.

ROBBERIES.—Aug. 17, 1902, several dental offices in Waterbury, Conn., were entered by thieves and several hundred dollars' worth of gold and material was taken.—Sept. 19, \$300 worth of stuff was taken from the offices of four dentists in a building on the West Side of Chicago.—September 7, \$100 worth of material was taken from the offices of two dentists at Springfield, Ill.—August 20, a daring robbery was committed in Lowell, Mass., by a sneak thief, who took a watch out of a coat in a dentist's reception room while the dentist and the owner of the watch were in the next room with the door open.—August 24, the office of a dentist at Fergus Falls, Minn., was robbed of \$60 worth of gold.—September 7, a dentist at Fremont, Neb., lost \$75

through burglary.—September 4, \$200 worth of booty was taken from the offices of three dentists at Batavia, N. Y.—September 12, a considerable amount of gold and other material was taken from the office of a dentist at Marysville, O.—September 16, a dentist at Cleveland found himself \$25 poorer through the visit of a light-fingered individual.—September 4, considerable stuff was taken from the office of a dentist at Piqua, O.—September 2, a thief in Dayton, O., made a considerable haul from a dentist's office.—August 21, a dentist in Philadelphia lost a considerable amount of gold and other material.

CLEFT PALATE.—A. Vander Veer (*Reference Hand-Book of Medical Science*) ascribes the cause of this deformity to heredity and the want of a meat diet and of sufficient phosphates on the part of the mother. In confirmation of this view, he cites the fact that several years ago the lions in the Zoölogical Gardens of London were fed upon flesh containing too large bones for them to break and swallow. The young born while this method of feeding was pursued had cleft palates and lived but a short time. The lions were then fed upon small animals, whose bones they could break easily, and the young born afterward had perfectly formed palates.

COCAIN-EATING IN BENGAL.—The habit of cocain eating seems to have spread extensively, says the *Lancet*, among the natives of Bengal. It is sold in small paper packets, containing one-half or one grain, which are obtained for one-half or one anna, respectively. It is impossible to say how much is consumed by any one individual, but several grains a day have been confessed to. The sense of feeling well is followed by depression, but the habit appears to be peculiarly seductive, and once commenced is with the greatest difficulty abandoned. A blackening of the teeth is said to be caused by cocain-eating, and the blackening is thought to be characteristic.

FELON.—Seneca D. Powell (post-graduate) suggests the following method of treatment for felons: Take a hypodermic syringe and find the sensitive point, or take a lead-pencil and press the point down over the felon until you thus localize the sensitive point. Go down to the periosteum with the hypodermic and inject cocain at this point, and keep injecting it as you draw out the syringe. Then cut down to the periosteum with a bistoury, and with a syringe or probe go down into the pocket and inject carbolic acid. You have then taken the necessary steps to kill the microbe. If you are afraid of carbolic poisoning, put in some alcohol. Put on a loose dressing.

NOT LIABLE TO OCCUPATION TAX BY HAVING TWO OFFICES.—The Court of Criminal Appeals of Texas has, in *Broiles vs. State*, reversed the judgment of the County Court, wherein the party named was convicted, under subdivision 13 of the occupation tax act of 1897, for practicing medicine as a specialist, traveling from place to place, and his punishment assessed at a fine of \$75, being the amount of state and county taxes. It says that the proof showed that he was located and had his residence at one place, and also kept an office in another town, where this offense was alleged to have been committed. But he was not, it holds, a traveling physician or specialist going from place to place in the practice of his profession, within the meaning of the occupation

tax act, and that a new trial should have been granted because the evidence failed to support the verdict.—*Jour. A. M. A.*

GROWTH OF THE HAIR.—Dr. Jolly (*La Presse Med.*) recalls his former work on the chemical composition of horse-hair. Functional activity attains its maximum in the black hairs, which contain infinitely more phosphate of iron than red or blonde hairs. Falling of the hair is often observed in nursing animals; similarly, nursing women lose a great deal of hair. This is apparently caused by the fact that the phosphates are not fixed in the hairs, but are carried away by the milk secretion. Loss of hair in arthritic persons is quite different. An arthritic patient is one whose cellular nutritive functions are modified by his disease, and in whom the hairs effect the permanent fixation of the phosphates in themselves in a very imperfect manner.

FATALITIES.—A young woman at Camden, N. J., is dying from lockjaw following the extraction of a second molar.—A girl in Chicago recently tried to relieve toothache by putting a quantity of carbolic acid in the cavity. She accidentally swallowed considerable of the acid, and for a time her life was despaired of, but she will recover.—A man at Salina, Kan., took gas for the extraction of a tooth, and for several hours afterwards was so dizzy that he could not walk.—A young woman at Blairsburg, Ia., almost bled to death last month from the extraction of a tooth, but is slowly recovering.—A woman at Wilkesbarre, Pa., recently had several teeth filled and crowned. A few days later her teeth began to ache, her gums became inflamed, her limbs swelled, and she had a peculiar metallic taste in her mouth. The physicians in the hospital to which she was taken diagnosed her case as one of metallic poisoning, and discovered that the crowns were made of brass and not gold. The woman died a few days later and the coroner is investigating.—A fourteen-year-old boy at Rose Point, Pa., died July 28 in a dentist's chair while having some teeth extracted. A physician administered the anesthetic.—July 14 a woman at Massillon, O., died under the influence of chloroform given prior to tooth extraction.—September 12, a woman at Taylorville, Ill., died under the influence of chloroform while having a tooth extracted.—August 24, a man at Sandusky, O., had a tooth extracted and almost died from hemorrhage.—August 28, a boy at Denver, Colo., had a tooth extracted and it was a week before the flow of blood could be stopped. He came from a family of "bleeders."—August 29, a three-year-old child at Newport, Pa., died from blood-poisoning, resulting from the extraction of a tooth.—September 11, a woman at Niles, O., died under chloroform given for tooth extraction.—August 28, a boy at Toledo, O., had some teeth extracted by a street fakir and lockjaw set in. His recovery, however, is expected.—September 11, a woman in Chicago died under gas given prior to tooth extraction.—Aug. 31, a young woman in Brooklyn had a tooth extracted, and the hemorrhage was so great that for some time her life was despaired of.—Sept. 1, a woman in Chicago died under chloroform given prior to tooth extraction.—September 11, a young woman at New Orleans died under chloroform. Three administrations were made, as she had several teeth to be taken out.

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